DOMESTIC ENGINEERING

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Cut out; frame neatly; put in show window; change weekly.

UP, NOT DOWN.

Every business moves in one of two directions—up or down. Upward, if the men behind it are thoughtful, serious, earnest. Downward, if selfishness, greed and envy hold sway in the minds of the men behind the business. One sure indication of the direction a business is traveling is in the quality of goods used. If they are high grade, bearing the maker's name and guarantee, it is certain that business is growing upward. If poor goods, substitution and deceit characterize the material,—watch out. That business is on the toboggan.

GREAT DEVELOPMENTS IN SPANISH AMERICA

Speedy Completion of the Panama Canal Producing Marked Industrial Activity in Latin America

The $30,000,000 Pan American Bank will give a Tremendous Impetus to Industrial Expansion

The Industrial Evolution of Latin America Is Imperative.

The civilizing influences of the twentieth century are co-extensive with the life producing rays of our own Sun, on this planet.

Wherever on this globe is found the **inspirative touch of civilization** there also will be disclosed the **irrevocable tracks of modern industrialism.**

The spheres of influence center in and emanate from the **nations most active** in their efforts along the lines of **industrial expansion.**

Industrialism before the end of this century will become concentric.

The indications of concentricity are quite noticeable in many lines of business and will become more acute in the next decade.

In from 10 to 20 years concentricity in manufacturing will be a most marked feature of European industrialism.

The same inexorable laws of attraction and repulsion so noticeable in our Sun, and the myriads of suns which sparkle in the Empyrian, will be **reflected in the economic distribution of industrialism.**

Business men who are especially **endowed with synchronistic powers** are able to compute quite accurately the time of expansion in their immediate domain of every manufacturing nation on earth and also the **era of equilibrium** and where **concentration will obtain.**

This is not so difficult a problem as it might appear, at first glance.

A far more complex situation confronts the astronomers of the world, who will this year be busy until Sept. 23 trying to solve the supposed **marvellous engineering feats connected with the Martian canals** and thus establish the probability of a superior race of **intellectual and physical giants,** the remnants of former world's triumphs, battling for sustenance and prolongation of life on the oases of that dying little world. (Mars will be nearer our earth this year by millions of miles than it will be again for 33 years.)

The expansion of population in the United States is

beginning to mark the **retardation of its agricultural expansion abroad.**

This will be more than offset by the **enormous expansion and output of its industrial establishments** which increased during seven years, 1900 to 1907, from $11,141,121,122 to $14,802,147,087. This indicates an **annual increase in manufactured products of the United States of $523,003,709.**

Every year its manufacturing plants are turning out and selling at home and abroad products of the **value of one-sixth of the total value of property of all descriptions in the United States.**

By the time the Panama canal is completed the value of the property of all descriptions in the United States should reach the stupendous total of **one hundred billions of dollars.**

When the Panama canal is thrown open to the commerce of the world thousands of the 15,000 ships which will probably pass through that commercial gateway the first year, will be loaded with a portion of the **eighteen billion dollars of manufactured products** the United States will be turning out that year and destined for South America and the Orient.

With the opening of the canal, South America, which has been increasing its commerce at the rate of $100,000,000 annually during the past 10 years, will begin active strides to reach the $150,000,000 mark of increase annually.

In less than 20 years Germany will be the dominating commercial nation of Europe.

In less than 20 years Japan will be commercially the dominant power of the Orient.

If you doubt this last prophesy watch the industrial movements of the little brown men, their initiative, acquisitive and expansive abilities and especially ponder over our drop in commercial prestige in China from 43 to 22 millions in 3 years.

The commerce of the West Indies alone is worth more to the United States than all Asia with Japan's forty-eight millions thrown in for good measure. While Japan seems to have struck a balancing point with the United States at forty-eight millions, there are no indications of any great expansion of that trade in the balance of the more or less civilized nations of Asia.

No section of the world in the next ten years will be more benefited by industrial expansion than will Latin America.

No section of the world is more ripe for such a stupendous industrial awakening than Latin America.

No section of the world is more eager to listen to the advancing footsteps of commercialism than Latin America.

No nations on earth are listening with greater expectancy and watching with more avidity the stupendous triumphs of engineering in the Panama Canal zone, which will bring billions of people thousands of miles nearer the great centers of commercial activity of the most agressive nations of the world, than are the Latin Americans.

They want the monied interests aroused to the possibilities of development of agriculture and industries in these nations and they also want the manufactured products of merit more speedily to hasten the day of thorough commercial activity in every country in South and Central America.

Every movement of any importance in the development of South America points to closer relations with the United States.

Peru has recently authorized the building of a railroad destined to open up that country and Western South America to immediate communication with the United States, upon the completion of the canal. This will reduce the time from that country to New York from 30 to 12 days and much less to the Southern ports of the United States.

The magnificent harbor of Paita near the northern boundary of Peru will receive the cargoes of thousands of ships and the new road will transport them to the interior and as far as the navigable branches of the Amazon. It will also carry the products of this almost inaccessible region to the boats that traverse the Amazon for two thousand miles to the fine harbor at Para, where the Brazilian government is already at work preparing for this enormous increase in business, due to these latest projects.

Here is a stretch of three thousand miles of rail and waterway, from the harbor at Paita on the Pacific coast to Para on the Atlantic coast which will tap some of the richest lands of the South American continent.

The development of the rubber industry, the mining industries and what is destined to become one of the most prolific agricultural sections of the world and help supply the world's breadstuff for another 150 years, is mentioned simply **to draw attention to the possibilities in store as a reward for the organized efforts making for the development of the great and inaccessible millions of acres of prolific lands.**

The assurances of a speedy completion of the canal may be said to act in favor of the extraordinary movement and projects contemplated throughout the South American countries.

The establishment of the $30,000,000 Pan American Bank in New York, which is looked upon so favorably by the governments of Latin America, will have a tremendous influence in stimulating business throughout the Central and South American republics. At present branches of this immensely capitalized bank will be established in Rio de Janeiro, Brazil; Buenos Aires, Argentine; Lima, Peru, and Valparaiso, Chile. Agencies will also be located in Santos, Brazil; Montevideo, Uruguay; La Paz, Bolivia; Guayaquil, Ecuador; Bogota, United States of Colombia and Caracas, Venezuela. Mexico, Cuba and the Central American republics will be looked after directly from headquarters, New York.

The ease with which a Spanish engineer at the head of the Sanitary Department of the Canal Zone overcame the deadly miasmatic conditions, where the nations of the earth predicted a monumental graveyard, and the tenacity in projecting and carrying to a most triumphal completion this stupendous engineering feat, has left a most happy impression upon all the peoples of these great countries.

They are now convinced that the engineering skill and the feats of reclamation through sanitary measures will redound to the advantage of South America in making the valley of the Amazon, the largest river in

the world, the most fertile and habitable spot on earth.

Millions of acres of virgin soil adapted for wheat culture in Northern Bolivia, Western Peru and the Uplands of the Amazon await the coming of capital and enterprise which will add untold riches to that entire section of undeveloped country.

While the capitalists of the United States have poured millions into Argentine to develop her resources, **it is only a beginning.** Every country of South America wants American capital, machinery and enterprise, to help develop its resources.

Inside of five years after the completion of the canal the $300,000,000 commerce of the western coast of South America will grow to $600,000,000. **The wealth** of those countries along the Pacific coast **will increase far beyond their most sanguine expectations** once the magic strides of a rejuvenated commerce begins to flow through the great canal.

It is with a marked degree of satisfaction that "Domestic Engineering," through its Spanish engineering journal **"Ingenieria,"** is able to place each month before the engineering fraternity of Mexico, the West Indies, Central and South America, the most up-to-date methods of accomplishing engineering projects known to the skilled engineers of the world.

It is with unstinted pride that we are able to announce the official adoption of Domestic Engineering's "Engineering Directories," the most extensively circulated engineering directories in the world, by the **American Supply and Machinery Manufacturers' Association.**

These three great directories, two of which are in English and one, "Directorio de Ingenieria," in Spanish, will be in the hands of **every recognized jobber of mill, steam, plumbing and hardware supplies on the entire western hemisphere.**

The American Supply and Machinery Manufacturers' Association is a large body of American manufacturers whose one great aim is to **produce and market products of high quality** and they are endorsed by the National Supply and Machinery Dealers' Association and the Southern Supply and Machinery Dealers' Association, leading recognized jobbers of the United States.

These three great associations are working harmoniously for the maintenance of "quality products" and the highest type of business ethics.

It will be our most cherished aim to produce in "Ingenieria" and "Directorio de Ingenieria" a journal and directory of high standing that will aid in upbuilding and developing the resources of the great Spanish American countries and acquaint them with the products of the leading manufacturers of the United States, **whose guarantees stand back of their products and every business transaction.** **Elmer Crawford.**

Preparatory Delay.

"Did you ever try gardening?" asked Mr. Crosslots.

"Once," answered the man who always has a discouraged look. "By the time I had read all the publications necessary to inform me on the subject, the season for flowers and vegetables was over."—Washington Star.

The Effect of Painting Radiating Surfaces*

BY JOHN R. ALLEN, Ann Arbor, Mich
(Member A. S. H. N. E.)

The experiments described in this paper were conducted in the Experimental Laboratory of the University of Michigan. The apparatus used for testing the radiators has been described previously in connection with the discussion of a paper presented before the Society. In conducting the experiments to determine the effect of painting upon the heat transmission through radiators, two flat cast iron boxes were used in place of the radiators.

Description of the Apparatus.

The apparatus used may be described as follows: The two cast iron boxes were placed near the inside wall of the room in the same relative position to the outside wall surface. On the floor below steam was admitted to a chamber through a reducing pressure valve. From this chamber, with nearly equal lengths of pipe, steam is conducted to the radiating surfaces. This piping is heavily covered with hair felt. Condensation from the two radiating surfaces is conducted to two chambers which are used to accumulate the condensation. These chambers are provided with guage glasses so that the condensation in the chambers may be maintained at a uniform level. The condensation is drawn through valves from these chambers to the cooling coils on the floor below. The condensation after being cooled so as to avoid steaming, is weighed in tubs. Valves below the chambers are set so as to obtain as nearly as possible a uniform discharge of water from the chambers. The usual period of time during which tests was accepted as correct the condensation for two successive hours was compared and a test was not considered satisfactory if the condensation for two successive hours varied more than 2 per cent.

Method of Making the Tests.

The method used in determining the effect of painting the radiating surfaces was to leave one radiator unpainted and paint the other. The heat loss from both radiators was determined in each test, and the ratio of the heat loss of the painted to the unpainted radiator was termed the efficiency. During the tests, readings were taken of the temperature of the steam entering the radiator, of the

*Read at the summer meeting of the American Society of Heating and Ventilating Engineers, held at Indianapolis, Ind., July 15 and 16, 1909.

temperature of the water leaving the radiator, of the steam pressure, of the temperature of the outside air; the moisture condition was determined by a wet and dry bulb thermometer, and the temperature of the room was taken in three different places. Thermometers subject to radiant heat had their bulbs protected with paper cones so as to avoid error. The actual surface of the radiators used was obtained by careful measurements.

Reading Taken.

The actual surface of radiator No. 1 was 9.99 square feet; of radiator No. 2 the actual surface was 9.9 square feet. The steam pressure maintained throughout the entire test was 4¼ pounds guage. All readings given in the following table of results are corrected readings. Corrections were made for steam guage and thermometers both before and after the test. The following table gives the principal results obtained from these tests.

Column 10 of the table headed "efficiency" gives the heat transmission of radiator No. 2 as compared with radiator No. 1, which has been assumed as a standard and was left unpainted during the test. In comparing the effect of the various coats, the efficiency, as given in column 10, has been taken as a basis of comparison. Tests 1 and 2 were made with both radiators unpainted and an average of the results gives a difference in the heat transmission in the two radiators of .1 of 1 per cent., so that they are assumed as having practically the same heat transmission value. Lines Nos. 3 and 4 show the effect of painting radiators with two coats of copper bronze for each test. The results of the test show a reduction in the heat transmitted by the radiator of 24 per cent. On top of these four coats of copper bronze two coats of terra cotta enamel were applied. The result of the additional two coats was an increase of 3.8 per cent above the transmission effect of the bare radiator or 28.6 per cent above the transmission effect of the radiator with a copper bronze finish. On top of these coats of terra cotta enamel were applied two coats of copper bronze, the same as was applied previously, and the loss in the conducting capacity was shown to be about 26.5 per cent. This is about the same results as was obtained in the first experiments with copper bronze.

In order to determine whether this loss in heat transmission was produced by the pigment of the paint or by the vehicle carrying this pigment, test No. 7 was made using only the vehicle which was a light brown varnish. This test shows a loss of 2.8 per cent as compared with the unpainted radiator. The same was true when a light oak brown varnish was used. This varnish was applied on top of the coats as previously mentioned. The varnish was followed by two coats of aluminum bronze, and the heat transmission was nearly the same as that shown by the copper bronze, namely a loss of 27 per cent.

The interesting fact is that the transmission of heat was almost the same with 14 coats of paint applied to the radiator as with two coats, and that

RADIATOR TESTS

Table I.

1	2	3	4	5	6	7	8	9	10	11		
					Radiator No. 1.		Radiator No. 2.					
No. of Test.	Steam Pressure.	Average room temp.	Average temp. of steam entering the radiator.	Difference in temp between air and steam.	Condensation per hr. per sq. ft. actual surface.	B.T.U.'s rad. per hr. per sq. ft. of surface per deg. diff. of temp.	Condensation per hr. per sq. ft. actual surface.	B.T.U.'s rad. per hr. per sq. ft. of surface per deg. diff. in temp	Efficiency.	Humidity.		REMARKS. Radiator No. 2 Plain in all tests.
1	425	74.4	222	148.6	.413	2.82	.413	2.82	.997	.45	1	Rad. No. 1 Plain as received from factory
2	"	76.0	220	144.0	.418	2.94	.414	2.925	1.005	.408	2	" " " " " " "
3	"	63.1	224	156.3	.353	2.16	.438	2.835	.761	.542	3	" " Painted with Copper Bronze
4	"	72.3	220	148.7	.325	2.08	.432	2.78	.752	.608	4	" " " " " "
5	"	74.5	220	146.5	.436	2.86	.426	2.78	1.038	.437	5	" " " " Terra Cotta Enamel
6	"	66.3	218	149.7	.351	2.24	.478	3.05	.735	.482	6	" " " " Copper Bronze
7	"	74.1	224	150.9	.421	2.67	.442	2.74	.977	.510	7	" " " " Light Brown Varnish
8	"	72.9	226	154.0	.431	2.67	.442	2.74	.977	.572	8	" " " " Oak Brown Varnish
9	"	71.8	225	154.0	.318	1.97	.436	2.70	.730	.512	9	" " " " Aluminum Bronze
10	"	70.5	224	154.4	.324	2.005	.448	2.77	.724	.525	10	" " " " " "
11	"	66.7	223	157.3	.442	2.68	.441	2.77	.970	.530	11	" " " " Silver Gray Enamel
12	"	67.6	224	157.4	.452	2.75	.446	2.72	1.01	.520	12	" " " " Snow-White Enamel
13	"	64.2	224	160.5	.446	2.66	.448	2.67	.997	.708	13	" " " " Bronze Green Enamel
14	"	64.0	224	161.0	.429	2.545	.447	2.67	.956	.735	14	" " " " No Lustre Green Enamel
15	"	70.6	224	154.4	.423	2.62	.423	2.63	.997	.670	15	" " " " Maroon Gloss Japan
16	"	68.5	224	156.5	.364	2.22	.427	2.61	.850	.680	16	" " " " Shellac and Copper Bronze Powder.
17	"	67.0	224	158.0	.347	2.02	.469	2.66	.760	.665	17	" " " " Copper Bronze Powder and Linseed Oil.
18	"	86.9	224	138.1	.379	2.62	.381	2.66	.987	.848	18	" " " " White Paint
19	"	83.4	224	140.5	.389	2.65	.386	2.64	1.00	.88	19	" " " " Terra Cotta Paint
20	"	86.8	224	138.0	.374	2.59	.378	2.62	.989	.84	20	" " " " Light Green Paint
21	"	77.2	224	147.8	.423	2.72	.418	2.72	1.00	.60	21	" " " " " " " " Zinc
22	"	77.7	**224**	146.3	.408	2.66	.422	2.77	.964	.535	22	" " " " Terra Cotta Paint Zinc
23	"	76.0	224	149.0	.418	2.70	.413	2.68	1.01	.540	23	" " " " White Paint Zinc

These paints of two coats each were painted over one another in the order given.

This Series follows one another.

Painted over one another.

the effect apparently depended upon the last coat applied and the intermediate coats through which this heat was transmitted had very little effect upon the heat transmission. That is, the heating effect of the radiator was more affected by the condition of the surface than by the material through which the heat was conducted.

Tests 10, 11, 12, 13, 14 and 15 were started with two coats of aluminum bronze. The heat transmission was practically the same as for the aluminum bronze in Test No. 9 in which twelve coats of other paints had been applied, showing, as previously stated, that the various coats underneath the last coat made very little difference in the heat transmission. These coats of aluminum bronze were followed by a series of enamels of different colors as stated in table. You will note, as shown in test No. 12, that the snow-white enamel gave the best results. The lowest result was given by "no lustre" green. The extreme difference due to color was about 5.4 per cent.

Tests 16 and 17 were made using a different vehicle for carrying the pigment. You will notice in these tests that copper bronze and shellac seem to give better results than copper bronze and linseed oil, so that the vehicle may have some effect in the value of the heat transmission of paints. Tests 18, 19 and 20, made with white lead paints show that the transmission effect with white lead and oil is practically the same as for unpainted radiators. These white lead paints were followed by coats of

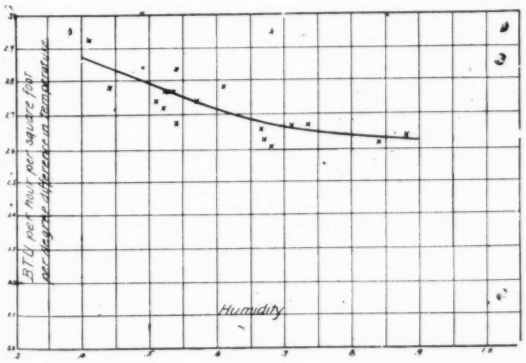

Fig. 1.

zinc paint, as shown in tests 21, 22 and 23. For the light green and white the transmission effect was practically the same as for unpainted radiators. For terra cotta there was a slight reduction in heat transmission.

These tests covered a period of about three months. They seem to show that the poorest coverings are the copper and aluminum bronzes; the best materials tried were the enamels, while white lead paints and zinc paint are only slightly less in transmission effect than a coat of enamel.

Effect of Humidity.

From columns 9 and 11 the curve shown in Fig. 1 has been plotted. This shows, as has been pointed out before in a previous paper, that the rate of transmission of heat varies with the humidity; that the higher the humidity, the lower the rate of transmission, the probable variation through ordinary ranges of humidity being about 10 per cent in the coefficient of radiation.

Kiln-Drying Lumber—II*

By Chas. L. Hubbard, of Auburndale, Mass.

Written expressly for "Domestic Engineering." All rights reserved.

Successful kiln-drying depends principally upon the two conditions mentioned in a previous article, that is, in first thoroughly heating and moistening the lumber, and after that in removing the moisture continuously as it is vaporized at the surface of the wood. Those form two distinct stages in the proc-

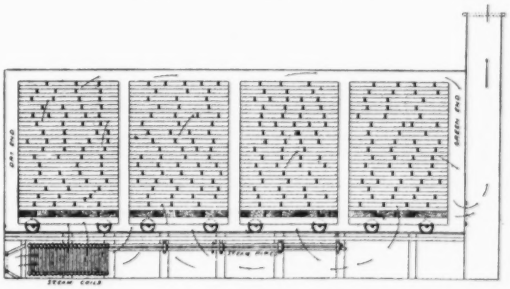

Fig. 3. Sectional view of the so-called "radiator kiln."

ess and should be separately considered. To carry out right drying principles, a properly constructed kiln is necessary. The essentials of kiln construction, in a general way are as follows:

A system of heaters or radiators, capable of maintaining the desired temperature at all times. Protection from outside influences, and the perfect control of the temperature and humidity of the drying chamber. Simple devices should be provided for controlling the circulation as desired, both between the kiln and the outer atmosphere, and between the

*The first instalment of this series of articles was published in the issue of July 17.

two ends of the kiln. Toward the end of the process abundant and vigorous circulation should be provided for, care being taken to maintain the same temperature as at the beginning.

There are two types of kilns in general use, commonly called the "moist-air" and "hot-blast" kilns. These terms, however, are somewhat misleading as they refer rather to methods of operation than of

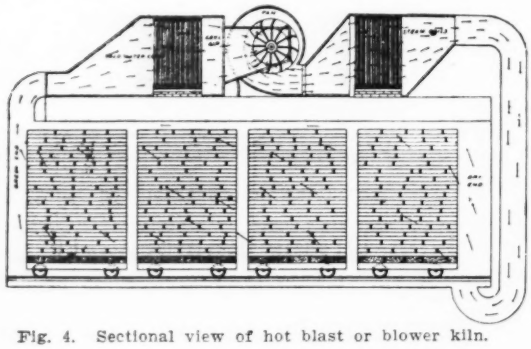

Fig. 4. Sectional view of hot blast or blower kiln.

construction, and as a matter of fact both are managed in the moist-air principle. A better designation is the "radiator" kiln and the "fan" or "blower" kiln. A sectional diagram of the former is shown in Fig. 3. In this a radiator made up of steam coils is placed beneath the floor at one end of the drying chamber and a shallow heater from one to four pipes deep is carried about two-third the length of the kiln is shown. The general direction of the air circulation is indicated by the arrows. Fig. 4 shows a similar section through a hot-blast or blower kiln. In this case there are no steam pipes in the drying chamber itself; the heat is supplied by air heated outside and forced into the kiln by a fan. Here, as before, the direction of the circulation is shown by the arrows.

There are two general methods followed in the kiln operation, the progressive and the charge systems. The progressive system is most widely employed in plants where the wood to be dried is of fairly even thickness and quality and where the drying is done in large amounts and continuously. Kilns for this purpose commonly vary in length from 50 to 150 feet, and in most cases the height is from 6 to 8 feet and the width from 10 to 30 feet. The temperature and moisture are so distributed in the kiln that in passing from the green to the dry end a load of lumber is first moistened, then heated, and finally dried out. Thus it is seen that all stages of the process are under way in different parts of the kiln at the same time. Circulation may be carried on by a draft lengthwise of the kiln, which carries back the moisture from the dry end and deposits it upon the green lumber at the wet end, or where moist-air drying is carried on to an extreme there may be but little circulation of any kind, and the humidity will be very high, even at the dry end. In cases of this kind there is but little difference in temperature throughout the entire length of the kiln and the wood must be very hot upon its removal to ensure the evaporation of the residual moisture after being placed in the open air. On this account it is well to have an open shed available where the stock may be exposed to the fresh air for a day or two after it leaves the kiln. In radiator kilns the required humidity is usually obtained by regulating the air circulation and temperature of the kiln, the moisture being supplied by the green lumber.

Moist air can easily be secured in blower kilns by returning the saturated air as it leaves the kiln, or by admitting wet steam, either into the air space at the heater or into direct contact with the lumber in the chamber. Where a circulation of air is used the temperature difference between the two ends of the kiln commonly ranges from 20 to 40 degrees.

Limitation is maintained within the kiln in various ways, the simplest being a system of ventilator shafts in case of the radiator kiln and a fan in the hot-blast system.

There are also certain makes of both radiator and blower kilns operated on the moist-air principle, which are equipped with controlling chambers for the removal of a portion of the moisture from the air. Such an arrangement is shown in Fig. 4 where the return air from the kiln is drawn through cold-water coils on its way to the fan.

Careful study shows that the most successful results in kiln-drying lumber heavier than pine and poplar are obtained by the use of the moist air system, and most of the past and present improvement in kiln-drying has been along this line.

Kilns for use in the charge system are usually square in form. The lumber is placed upon trucks or piled upon the floor and the entire charge dried before fresh material is introduced. For novelty works and other plants where smaller quantities are dried at one time this method is widely used, and where particular attention must be given to the thickness and quality of the stock it probably gives the best results.

Drying in any case may be either continuous or intermittent, but the former is much to be preferred. This makes it necessary to operate the plant at night and to use live steam for heating after the engines shut down.

Some Practices of the English Plumber

WRITTEN EXPRESSLY FOR "DOMESTIC ENGINEERING."

In the tight little isle across the Atlantic there abound many beautiful and historical examples of the honorable craft of the plumber.

Lead covered roofs and highly ornamental spout heads for rain water pipes, grotesque and fanciful gargoyles (used as a spout for the purpose of carrying the water clear from the wall) are in existence after having stood the exposure of the elements for hundreds of years.

Many curious and highly artistic specimens remain, in the old castles and cathedrals, of the lead workers' art of the middle ages, showing that the craftsmen of those far-gone days realized that the quaint and beautiful figures they formed of and in the lead would endure for ages.

The modern plumber has been obliged to direct his attention more to sanitation and therefore has been obliged to neglect the skill necessary to form lead into ornamental forms.

In some of the technical schools, however, a careful study has been made of the designs of the ancient plumbers, or lead workers, and a considerable revival has resulted in the use of lead for decoration and other purposes.

In Figure 1 may be seen an English plumber engaged in the task of working the dent out of the bend of a portion of lead soil pipe. This pipe had been previously laid on the floor (after having a mandrel driven through the pipe to remove all dents) and with the knee placed on the pipe the end was pulled upwards. This caused the sides to bulge out and a wrinkle or buckle to be formed in the throat. The plumber is working out the throat of the bend with a dummy so that the pipe shall be perfectly round at the bend.

Figure 2 shows an apprentice engaged in passing by means of a cord and weight the bobbin through a double lead bend. In its passage through the pipe is dressed on it all dents, buckles and marks removed and the bend left entirely cylindrical in form. Attention is also called to the lead panels which are fastened upon the walls of this English work shop.

These panels are of lead and contain many strikingly beautiful forms worked out with the various tools peculiar to the trade and finished up with mal-

Fig 1. An English Craftsman engaged in the task of removing some dents which were found in a portion of lead soil pipe.

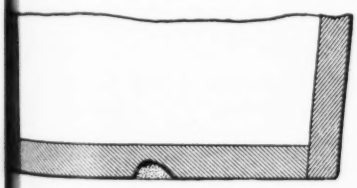

Fig. 3. Represents a wooden shell covered in the most ordinary method.

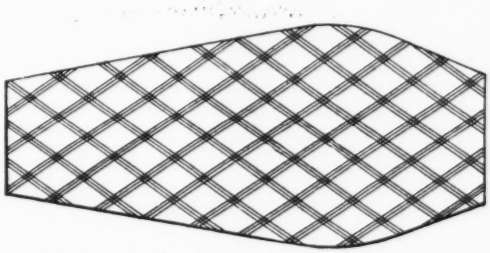

Fig. 5. An old time method of decorating the lead coffin by marking its surface with the prongs of a steel fork.

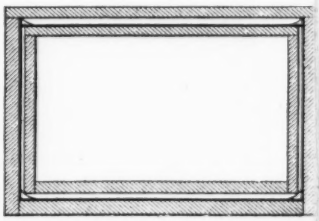

Fig. 6. A vertical section through the finished coffin.

let and wedge. For hundreds of years coffins have been more or less plentifully constructed of lead.

The old-time method was either to cast them in one piece and solder on the lid, or else to cast the

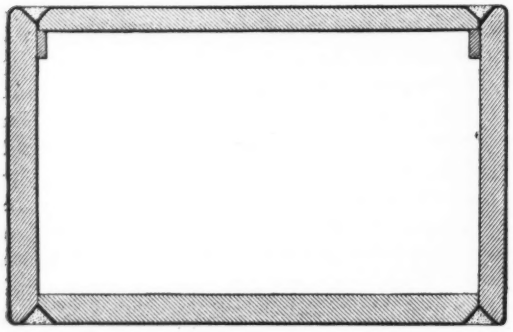

Fig. 4. Showing the manner in which the grooves and angles are formed.

sides, bottom ends and lid in separate pieces soldering them together on the inside and lastly, when ready, the lid from the outside.

However during recent years the inner part is covered on the outside, or the coffin proper is lined

Fig. 2. An apprentice at work passing the bobbin through a double lead bend. Notice also the beautiful patterns upon the lead panels which decorate the walls of the shop.

in a manner similar to a sink or cistern and after the wooden part has been placed inside the lead cover is soldered at the outside edges.

Figure 3 shows a wooden shell covered in the most common manner. On the bottom grooves are formed against the outside angles, as shown in Figure 4, and in the center of the ends as also shown in Figure 3. The bottom is in one piece and the edges are dressed into the grooves. The sides and half the ends are made in two other pieces and the edges also dressed into the grooves and bossed

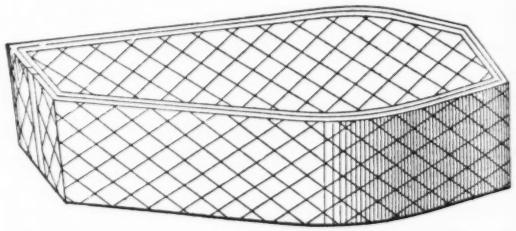

Fig. 7. Showing the form and surface appearance of a completed coffin.

over the corners at the bottom and at the ends, and the top edge is dressed over the edge of the shell and over a chamfered edge on the inside as shown in Figure 4. At various times in the past it was the custom to score the surface of the coffin diagonally with the prongs of a steel fork, giving it the appearance as shown in Figure 5. Generally the lead covering upon the shell has been cleaned and brightened with wire card and the ordinary black soil is not used in soldering.

The lead is well chalked and then rubbed with a raw potato which, in combination with the chalk prevents the solder from tinning beyond the edge of the shaving. The seam is then wiped flush in the ordinary, the chalk washed off and the whole surface scoured with a wire card.

When the body is in the shell the lid is placed in position and the seam soldered flush, after which the lid of the outer case is screwed down.

The usual weight of the lead is from 5 to 6 pounds per foot and about one-half pound of solder to the foot is generally sufficient.

When the outer case is lined with lead the shell is placed inside and as it does not fix tight to the sides of the case a supplementary wooden lid is

made to fit the case exactly, just below the top edge. Then the lead cover is put on as shown in Figure 6 and a seam is wiped in the angle, the sides of the inner lining being left standing upright. Figure 7 represents the completed coffin.

Note.—The writer is indebted to the publishers of that complete English work, "The Modern Plumber and Sanitary Engineer," for a considerable part of the information furnished in this article.

The New Massachusetts State Law Concerning the Plumbing Business

Editor's Note: We have in previous issues of "Domestic Engineering" given our readers a general idea of the new Massachusetts State Law concerning the Supervision of Plumbing, but inasmuch as this law covers many new and interesting points we take pleasure in publishing it herewith in its entirety.

An Act Relative to the Supervision of the Business of Plumbing.

Be it enacted, etc., as follows:

Sect. 1. Within thirty days after the passage of this act, the state board of health shall appoint three examiners of plumbers. The first shall be a practical plumber of at least five years' continuous practical experience. The second shall be a sanitary expert and the third shall have such qualifications as may be required by the state board of health. The three persons so appointed shall be known as the state examiners of plumbers, and their terms of office shall be as follows: the first examiner shall be appointed for a term of three years; the second examiner for a term of two years; the third examiner for a term of one year; and all subsequent appointments, except the filling of vacancies shall be for terms of three years each. Appointments to fill vacancies shall be for the unexpired terms. The first examiner shall act as clerk. The compensation of the first examiner shall be two thousand dollars per annum or such other sum as may be fixed by the state board of health, subject to the approval of the governor and council. The compensation of each of the other examiners shall not exceed five dollars a day for every day of actual service, nor more than three hundred and fifty dollars in any one year. The compensation of the state examiners of plumbers, together with the traveling and other necessary expenses of the clerk shall, when approved by the chairman of the state board of health and by the governor and council, be paid from the treasury of the commonwealth.

Sect. 2. The state examiners of plumbers may make such rules as they deem necessary for the proper performance of their duties which rules shall take effect when approved by the state board of health. They shall examine in the manner prescribed by section four of chapter one hundred and three of the Revised Laws, all persons desiring to engage in the business of plumbing as master plumbers or to work at the business of plumbing as journeymen plumbers. They shall hold frequent examinations in the city of Boston. They shall also, twice in each year, hold examinations at five other convenient points within the commonwealth. Public notice shall be given of all examinations. Application for examination shall be made in the handwriting of the applicant and he shall be notified by the state examiner of plumbers as to the time and place of examination. The state examiners of plumbers may without the payment of any fee therefor, issue a probationary license, good for a term of six months, to one who, having worked either as an apprentice, or under a verbal agreement for instruction, for not less than three years presents an application therefor, bearing a written indorsement signed by his employer in which the employer agrees to be responsible for all work done under the license and to have the apprentice present himself for examination as a journeyman plumber at the expiration of the term for which the license was issued.

Sect. 3. It shall be the duty of the board of health of every city and town, or of the inspector of buildings of every city and town in which the inspector of buildings has control of the enforcement of the regulations relative to plumbing, to furnish the state examiners of plumbers within three months from the passage of this act with a correct list of the names and addresses of all registered or licensed plumbers within such city or town. All persons already holding legal certificates of registration may, within six months from the passage of this act, register anew with the state examiners of plumbers. A license heretofore issued to a person after an examination shall continue in effect for the

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"Here He Is." This is but a partial view of that popular, jovial man—H. W. O'Neil, vice-president of the James Reynolds Company, of Rochester, N. Y. The picture was made by our Mr. Winslow.

term for which it was issued, but may be exchanged, without payment of an additional fee, for a license issued by the state examiners of plumbers. Persons who have worked as journeymen plumbers, and who are registered as master plumbers under the provisions of chapter four hundred and fifty-five of the acts of the year eighteen hundred and ninety-four, shall be granted certificates of registration as journeymen plumbers; and persons who have passed the examination for, and who hold master plumber's licenses, shall without further examination be granted journeymen plumber's licenses by the state examiners of plumbers. The fees for registration, and for the license of a master plumber, shall be two dollars each. The fees for examination, and for renewals shall be fifty cents each. The fees for the registration and for the license of a journeyman plumber shall be fifty cents each. Fees received by the said examiners shall be paid monthly by their clerk into the treasury of the commonwealth. The report of the state examiners of plumbers shall be a part of the annual report of the state board of health.

Sect. 4. Certificates and licenses issued by the state examiners of plumbers shall be valid and have effect throughout the commonwealth. The said examiners shall from time to time forward to the board of health of each city and town, or to the inspector of buildings of each city and town in which the inspector of buildings has control of the enforcement of the regulations relative to plumbing, a list of the names and addresses of all persons within such city or town who have been granted plumbers' licenses or certificates. Licenses shall be issued for the term of one year, and shall be renewable on or before the first day of May in each year upon the payment of the required fee. Each holder of a master plumber's certificate or of license shall register his name and business address with the board of health of the city or town where the holder thereof desires to engage in the business of plumbing as a master plumber; except that in a city or town where the inspector of buildings has control of the enforcement of the regulations relative to plumbing, such holder shall register his name and address with the inspector of buildings. The said examiners may, after notice and a hearing, revoke the license of any person who, after having been convicted of a like offense, has violated any regulation relative to plumbing. If the holder of a certificate of registration or a license has, in the opinion of a board of health of a city or town or of the inspector of buildings of a city or town in which such inspector has control of the enforcement of the regulations relative to plumbing, violated any statute, ordinance, by-law, rule or regulation relative to plumbing, the board of health or the inspector of buildings, if said inspector has control of the enforcement of regulations, relative to plumbing, of the city or town where such violation is deemed to have been committed may request the state examiners of plumbers to forbid such holder to engage in the business of plumbing as a master plumber, or to work at the business of plumbing as a journeyman plumber within such city or town, for a term not exceeding thirty days. After notice and after hearing both parties, the state examiners of plumbers shall serve notice of their decision on each of the parties interested. No person shall do any work in plumbing which is subject to inspection, unless he has been registered or licensed as a journeyman plumber in accordance with the provisions of this act, and his certificate or license shall be exhibited whenever required by the inspector of plumbing. Every master plumber's certificate or license shall at all times be displayed conspicuously within his place of business.

Sect. 5. Upon petition of the board of health of any town which has not accepted the provisions of chapter one hundred and three of the Revised Laws, the said examiners shall formulate rules relative to the construction, alteration, repair and inspection of all plumbing work within such town, which rules, when approved by the state board of health and accepted by the board of health of such town and published once a week for three consecutive weeks in some newspaper published in said town, if any, otherwise in a newspaper published in the county in which said town is situated, shall thereafter have the force and effect of law. Rules formulated as provided in this section may from time to time be revised upon a similar petition of the board of health of such town. The board of health of such town shall, within thirty days after rules formulated as provided herein have taken effect, appoint an inspector of plumbing having such qualifications and duties as are specified or referred to in sections five and six of chapter one hundred and three of the Revised Laws. Such inspector shall hold office for the term of three years, unless sooner removed for cause and after a hearing. He shall receive such compensation as may be determined by the board appointing him, subject to the approval of the selectmen, which compensation shall be paid from the treasury of the town. Appeal from a decision of any inspector appointed under authority of this section may be made to the state examiners of plumbers within ten days from the date of notice of such decision. The appellant shall deposit with the state examiners of plumbers the sum of five dollars, and if the appeal is sustained, the deposit shall be refunded to him. If the appeal is not sustained, the deposit shall be forfeited and shall be paid by the clerk of the state examiners of plumbers into the treasury of the commonwealth. The decision of said examiners shall be subject to the approval of the chairman of the state board of health, and a copy of the decision shall be served on each of the persons interested. All decisions of said examiners shall be subject to review by the superior court.

Sect. 6. Two or more towns may unite and form an inspection district, the expense attending the same to be paid on such basis as may be agreed upon by the boards of health of the towns forming such district.

Sect. 7. Inspectors of plumbing now holding office and in receipt of an annual salary shall be deemed to have been appointed under the rules of the civil service commission relative to classification, and such inspectors may perform such other inspection service as may be required by the board of health or by the inspector of buildings having control of the enforcement of regulations relative to plumbing. All inspectors hereafter appointed to like positions shall be certified from the classified lists of the civil service commission.

Sect. 8. Cities and towns that have continued to

operate under the provisions of chapter four hundred and seventy-seven of the acts of the year eighteen hundred and ninety-three or of acts in amendment thereof, shall be deemed to have accepted the provisions of chapter one hundred and three of the Revised Laws.

Sect. 9. The words "master or employing plumber", as used in chapter one hundred and three of the Revised Laws, shall be deemed to mean a plumber having a regular place of business and who himself, or by journeymen plumbers in his employ, performs plumbing work. The word "corporation", as used in said chapter one hundred and three, shall be deemed to mean a corporation formed for the purpose of engaging in the business of plumbing.

Sect. 10. Every person engaging in the business of plumbing as a master plumber, or working at the business of plumbing as a journeyman plumber, not having been registered or licensed as herein provided; and every person engaging in or working at the business of plumbing in a city or town where he has been forbidden so to do under the provisions of section four of this act; and every person violating any provisions of this act or any rule or regulation made thereunder shall be punished by a fine not exceeding fifty dollars for each offense.

Sect. 11. Upon the appointment of the state examiners of plumbers, the authority of the boards of examiners of plumbers appointed under the provisions of chapter one hundred and three of the Revised Laws shall cease, and said boards shall thereupon be abolished.

Sect. 12. All acts and parts of acts inconsistent herewith are hereby repealed. The provisions of this act in so far as they are the same as the provisions of chapter one hundred and three of the Revised Laws shall be construed as a continuation of said chapter and not as new enactments.

Approved June 19, 1909.

The Accomplished Craftsman

By Phoenix.

The man who says that technical education is not helpful has a bump of observation on his head like a dimple. The technical man who is not practical and the practical man who is ignorant of technical matters are both very much in the same condition as a rooster, with one wing clipped, trying to fly over a fence to greener fields beyond.

By the use of a little "horse sense" each of these men could be of the greatest assistance to the other and at length turn out a product that would be a winner. Some technical men say: "Why it is just as simple. A few yards only of geometry, five or six feet of equations minus 1723 cubic inches of calculus where we substitute the consideration that the persistent factor eliminates, in this case, the supposition of a result other than zero, minus the friction."

When the fitter, or the plumber, or the contractor gets up against statements similar to the foregoing, a look of intense disgust comes over his face, and his language, well, that language better be omitted. "Here am I," remarks the fitter (when he has stopped stuttering) a man brought up to the business from a kid. My jobs are put in O. K., and they hold up and get me more customers. What license has this technical man to fire at my head these combinations of calculations which it is impossible for me to understand, when he could not set up the stocks and dies correctly to cut a thread on a half-inch pipe?"

Why not have less Algebra and more "Horse Sense"

And there you are; **each rooster in this case has, you see, a crippled wing.** The technical man who backs up his statements with practical illustrations drawn from actual working conditions and **who is able to tell the results in such a manner that the man of average intelligence can understand,** is the man who commands attention and wins the respect of those who follow the craft for a living.

The man who works with the tools and the man who must estimate the job, are both learning constantly

C. N. Marcellus Co.
Grand Rapids Mich.
Patented Procelain Low Down Flush Tanks
Take Off Your Hat To The American
American Water Closets Quality Fixtures

The "American" exhibit of the C. N. Marcellus Company, of Grand Rapids, Mich., at the convention of the National Association of Master Plumbers, held recently in Detroit, Mich. The gentleman in the picture is C. N. Marcellus, president of the company, who was in charge of the exhibit and explained the features of his concern's products.

the value of knowledge other than that gained daily in their own shop, but they do not desire to take a course at college in order to be able to translate the information, nor is it necessary. One of the best and most successful master fitters in the country recently made the remark that there was not a problem in our business but what could be solved by arithmetic, and I think he is about right. The maintenance of the whole business with all its various dependencies rests upon the shoulders of men who run the shops. They are the people who get out and do the work, and dispose of the manufacturers' products (generally) in a legitimate manner. Consequently these are the people who deserve every assistance that can be afforded. **Any person who makes the statement that these people do not want to learn is not acquainted with the situation.**

These men who work are dead willing to be shown and hundreds of them grasp eagerly **any means for obtaining definite information** to their advantage.

A few years ago the writer knew a fitter in a western city who possessed a very limited education and little knowledge of his trade other than that gained in the shop.

This man took a course in a correspondence school and today is one of the best posted men in his city and he can now produce heating plans which would be a credit to any person. It is hardly necessary to state that **his wages have become a salary** very much larger than he received before acquiring the technical education and that here is a man who can make good on nearly any proposition in the whole business.

Another case was that of a boy in a shop who was getting about three dollars a week at the start, and after several years got up to two dollars a day. This lad took a technical course continuing his work in the shop and finally came out a winner and today is a successful man in the business.

In a distant city two mechanics opened up a shop and as time passed by gathered in more or less work. Becoming convinced that they needed other knowledge than that gained at the bench these men took a technical course and today they are doing jobs which run into the hundred thousand dollar class, which, they never could have done with the knowledge they gained in the shop alone.

Are these isolated cases, or visions trumped up for the sake of filling space? **They are not and these people are all alive and doing business with a success that makes their competitors turn green with envy.**

There are not only three, but hundreds of cases which can be quoted showing that those in the shops are anxious to lay hold of better and more accurate information, of a wider field than they can ever hope to obtain in daily shop practice, and that when they do acquire more information they stand out from the ranks in a noticeable manner and this increase in capability has a direct influence upon their earning capacity doubling and in some cases increasing it fourfold. These valuable all around men are able to make good in the business upon nearly any proposition which comes up.

If these things are true, and men can show an improvement with such slim portions of the knowledge rendered as they are able to absorb, in the incomprehensible form that much of it is delivered how much more could be accomplished if the knowledge were put in practical form and not loaded down with formulas until it resembles some horoscope cast by a wise man of the far east?

The fitter and plumber have the right to ask for instruction to be given in a form easier of comprehension.

The best man in the craft today is the man who has both practical and technical knowledge, and better still if he can acquire them hand in hand as he progresses. If he possesses the ability to boil down his technical acquirements and put them into a sensible form in the good English language he will in due time, according to advices received from a correspondent in the Southwest, have a monument erected to his memory by the grateful members of the craft.

Factory Sanitation

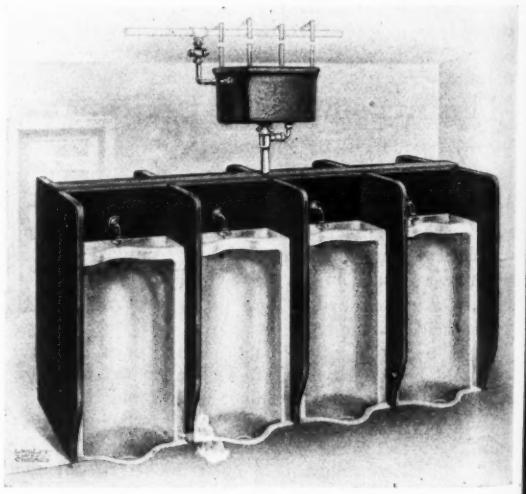
By F. W. Heck, Plumbing Inspector, Department of Health, Chicago.

In the absence of a plan of the proposed factory building showing intended location of plumbing fixtures, size of toilet rooms, etc., I will answer the question only in a general way.

I take the position that the first floor will be used for foundry purposes, and the upper floors for storing and manufacturing purposes.

Factory Urinals.

In regard to urinals on ground floor, I would suggest that a pattern similar in design to Wolffs' H-8500



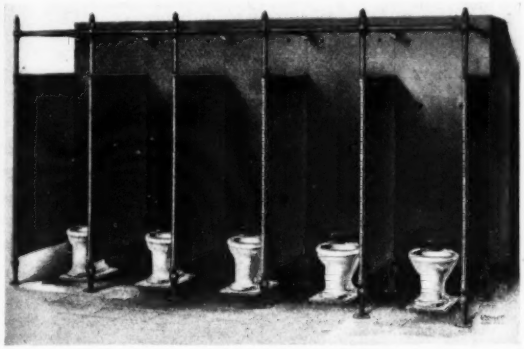
Type of urinal recommended by F. W. Heck for factory use. It is plate H-8500 from the catalogue of the L. Wolff Mfg. Co., of Chicago.

be used owing to the fact that there are no finished floors in places used as a foundry, and with this style of fixture I feel there will be less trouble to keep it

in order; for the upper floors would say, a fixture similar to Wolffs' 8510 be used. This style of fixture when properly installed I find gives satisfaction.

Factory Water Closets.

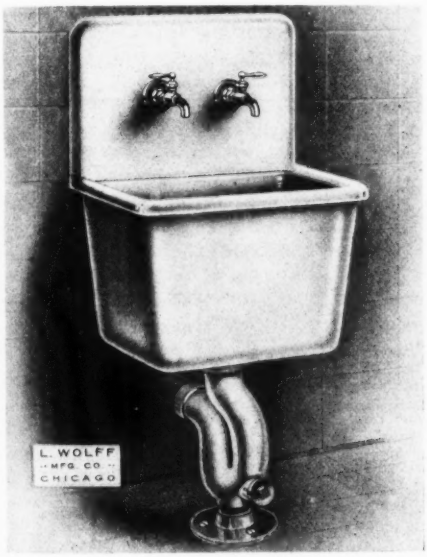
The question of water closets is a very broad one, where closets are liable to be given hard usage, a fixture similar to Wolffs' H-7300 does the work required of it, but I make the one distinction, that a porcelain seat integral or enameled steel, be used.



Type of water closet recommended by F. W. Heck for factory use. It is plate H-7300 in the catalogue of L. Wolff Mfg. Co., of Chicago.

Factory Sinks.

As to sinks, I suggest a fixture similar to Wolffs' H-8135, to be used as a sink, and a sink only. There is at all times a strong demand for a fixture of that kind.



Type of sink recommended by F. W. Heck for factory use. It is plate H-8135 in the catalogue of L. Wolff Mfg. Co., of Chicago.

Factory Lavatories.

In regard to lavatories I would advise the use of a lavatory and frame similar in design to Wolffs' "Montrose" H-3062 and would suggest that the vent pipes from traps be carried up and across the lavatories high enough so that same could be used for towel racks. This frame makes it possible to use soap fastened to a small hanging chain.

Factory Shower Baths.

Along the line of washing facilities in large manufacturing buildings, it would certainly reflect to the credit of the proprietors if a system of shower baths were installed. A fixture of this kind is very easily provided for, more so in buildings that are steam heated and of the kind that are known as reinforced concrete, where a system of hot and cold water pipes are installed for sinks and lavatories it would require but a little more expense to furnish the necessary pipe and a proper mixing chamber with spray attachments. In buildings where the hot water piping is omitted but which are steam heated, and where steam is used for power purposes, an arrangement could easily be made whereby the cold water could be heated by steam and made to serve the same purpose. In foundries and places of a similar character, men during working hours are pretty well stripped of clothing and if given the proper facilities, the majority of men and boys would gladly avail themselves of the opportunity, after their day's work is done, of thoroughly cleansing their bodies of dust and sweat, enabling them to put on clean clothing before returning home.

In the installation of the various plumbing fixtures I would advise that all work be so arranged that it would be possible for an attendant to use a small hose and thoroughly scour and flush all parts of fixtures, likewise to avoid the use of wood in any form with the possible exception of the automatic flushing tanks. In making this suggestion I have in mind a certain toilet room that contains sixty water closets, being used on an average by about five hundred men, mostly of the ignorant foreign class. At the time I saw this place it had been in use about six months and I was surprised to find the room was almost entirely void of any foul odor. It is a well known fact that wood absorbs moisture—moisture and filth breed disease; hence the idea of avoiding the use of wood.

Sound Travel in Pipes

The query of our correspondent as to the cause of a hissing noise heard all over the house caused by opening a faucet anywhere on the plumbing system has called forth several additional replies, of which we publish the following:

H. S. Rumsey, Vice-Pres. of L. M. Rumsey Mfg. Co., St. Louis, Mo.

We do not know whether the supply in this building is ¾" throughout. If the supply is only ¾" all the way through the building it is entirely too small and the noise is no doubt caused by the extreme high pressure on the small pipe, so when a number of

faucets are opened the water must necessarily travel through a small pipe of this kind at a high velocity, which would cause the noise you speak of.

Your suggestion of running a large pipe to the top of the building and taking your supply from the top of the building, in gravity the supply would be a good one. You would have enough water at all times and your pressure would not be excessive. If you were to run say two or two and a half supply to the top of the hotel and run this into the tank with a ball cock, so you would keep a constant level in your tank and take your supply for the entire building from this tank you would no doubt overcome the noise. A good way would be to use a larger connection and use a pressure regulator, also air chambers.

If I had a blue print of the building I would be in position to go into details on this proposition. Would also want to know the water pressure you have there.

In regard to the soil pipe there is bound to be more or less noise when same is exhausting. This could be overcome to a certain extent by encasing same with mineral wool, sand, or almost anything to deaden the noise.

P. J. Madden, Sanitary Engineer, Chicago.

The conditions described may be due to vibration of the piping in addition to its small size. The general tendency has been in the past to use supply piping entirely too small in size to properly supply the number of fixtures in the building. Increasing the size of the supply would unquestionably greatly help to overcome the hissing noise complained of.

Again vertical piping in partitions should always be blocked in position so that there will be no vibration when water is turned on and off. Proper allowance must also be made for expansion. Where pipes are placed inside of partitions and these partitions open from top to bottom, the communication of sound is greater than where the partitions are stopped, say at each floor in order to prevent this communication. If the piping is increased in size, the main supply being in cross section of such area as to equal the outlets which the pipe is to supply, I believe that the hissing noise will be entirely overcome providing, of course, the vertical pipe is properly blocked in position.

Enclosing the pipe with wood casing packed in mineral wool is an excellent deadener, and I would recommend this as the best means that can be taken to overcome the carrying of sound; yet the first consideration must be that the main supply is large enough. The overhead supply system is the very best that can be used. This is especially true of hot water installations as well as for cold water systems.

Plumbing Inspector.

Relative to the cause of sound travel, of which your correspondent complains, it is obvious there is a cause, that the traveling of sound is only an effect, and it therefore becomes necessary to look for the cause.

I hesitate to express a positive opinion on the subject without being in a position to make a personal investigation of the matter, as there are a number of things that might cause the trouble complained of.

One suggestion that may be of use is to see that the line of supply pipe is open in its water way, to its full extent, from the street main to the terminus of the line, that there is no obstruction of any character, either in the valves, fittings, stop cocks, or anything that may cause friction in the pipes. It would probably be well to see that the stop cocks or valves are of such character as to admit of a full open way, and that they are open full.

Owing to lack of complete information it is difficult to say just what is the cause.

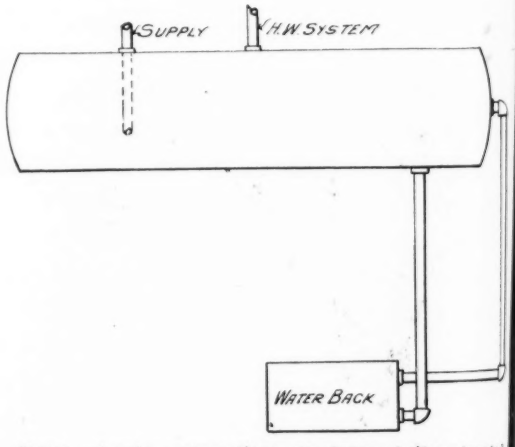
Questions and Answers

This Department is maintained for the use of every reader of "Domestic Engineering." We solicit problems from you and will give them our best attention. In stating your questions please give all of the facts as clearly as possible and when necessary accompany your question with a correct layout of the job.

HAS ANY READER A TANK SO LOCATED?

181. St. Louis, Mo.—To the Editor of "Domestic Engineering." Sir: I should be pleased to know if a kitchen range boiler can be located in the cellar under the range and have a proper circulation as it would when on the same floor with the range. Any information thankfully received. **S. H. F.**

We do not think it good practice to drop the boiler below the range and consider that difficulty in the circulation would result. A far better way would be to use a horizontal boiler installed directly above the range, should the floor space in the kitchen be limited.



Sketch showing connections to range boiler located horizontally above the kitchen range.

There would be no doubt in regard to the latter tank heating easily if placed above the range and connected as shown by the sketch.

HOW TO MAKE PLUMBERS' SOIL?

183. Camden, N. J.—To the Editor of "Domestic Engineering." Sir: Will you kindly explain in your paper how to prepare plumbers' soil? **Reader.**

Dissolve half an ounce of glue in water, after which

slowly add about a pint of dry lampblack, putting in water enough to bring the mixture to a consistency of a thick cream. Now boil the result, and stir smartly until the glue and lampblack are mixed thoroughly. When applied if the soil rubs off easily, add a little more glue.

HOW MUCH WATER RUNS THROUGH A PIPE?

Pittsburg, Pa.—To the Editor of "Domestic Engineering." Sir: Will you kindly give me some reliable, accurate information, without any cube root or equations, as to how much water will come out of the end of a water pipe?—**R. D.**

Under Hydraulics, page 33, in the Cyclopedia of Civil Engineering, published by the American School of Correspondence, we find table No. 10, which we reproduce in part for your benefit, thinking that it will meet the case.

Discharges of pipes in cubic feet per second and in gallons per minute for a velocity of one foot per second. (For other velocities multiply the discharge here given by the velocity expressed in feet per second.)

Diam. pipe in inches.	Discharge Cu. ft. second.	Gal. per minute.
1″	.0055	2.4
2″	.0218	9.8
3″	.0491	22.0
4″	.0873	39.1
6″	.1964	88.1
8″	.3491	157.0
10″	.5454	245.0
12″	.7854	352.0

WHAT EFFECT IS PRODUCED UPON THE HEATING CAPACITY OF RADIATORS BY BRONZING OR PAINTING?

184. Des Moines, Ia.—To the Editor of "Domestic Engineering." Sir: Can you give me any reliable information as to the best results to be obtained by painting or bronzing radiators? I have heard it stated that bronzing did not produce the best effects and if this is so, I would like to know it. **G. I. B.**

For an answer to this question we refer our reader to John R. Allen's practical and interesting paper, "The Effects of Painting Radiating Surfaces." This article is reproduced from a paper read at the summer meeting of the American Society of Heating and Ventilating Engineers, held recently at Indianapolis, and will be found on pages 123-125 in this issue of "Domestic Engineering."

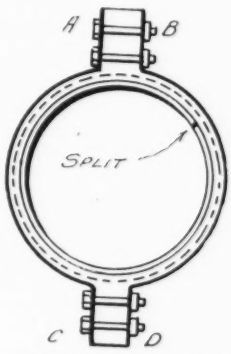
HOW TO REPAIR A SPLIT PIPE.

182. Minneapolis, Minn.—To the Editor of "Domestic Engineering." Sir: Can you suggest any method of securely repairing a split pipe? **F. G.**

The practical side of this question hinges upon several points, such as, the length of the split, kind of job it is on, the position of the split pipe—whether on main, branch, or riser—and also the size of the pipe.

For instance: few customers would care to have an exposed riser repaired. This riser might run to any second-story room, and thus show considerably in any first-story room. Under these circumstances it would be far better to remove the split riser at once and save the time, trouble, annoyance and expense of trying to repair the split riser.

If the split is over twelve inches in length it is rather a difficult matter to so repair as to make a tight job although it can be done. It will also be found more difficult to get a hot water pipe to hold than a steam pipe.



Sketch showing location of split in the pipe, the dotted line representing the sleeve, which in actual practice would hug the pipe snugly. The iron bands are shown not fully drawn into position. When in place the ends A and B, C and D would almost face up.

Supposing, however, that the split is on a branch or main or riser that would involve considerable time and trouble to remove we should proceed as follows: First, clean the pipe thoroughly removing all grease, dirt, rust or paint. Then let the steam go down, or if on a hot water job, the water should be drawn down to a point below where the split is located and the pipe wiped thoroughly dry. Next mix up some reliable iron cement, according to the printed directions and work thoroughly into the split allowing it to dry while the completing arrangements are being made. In case it is found impossible to obtain the iron cement some litharge mixed with linseed oil may be used, or a very good cement can be made of red and white lead mixed quite thickly in oil and some iron dust stirred in. A sleeve of tin (copper if the repairs are supposed to be permanent) should now be made and fitted to the pipe and, after smearing on the split a little more paste, the sleeve should be smoothly fitted on and drawn down tightly by the iron bands as shown in the drawing. These bands can be easily and quickly made at any blacksmith shop and a sufficient number should be made to hold the sleeve firmly in place.

Town with a Future.

"Paris is a wonderful center of social gayety and popular excitement."

"Yes," answered Mr. Cumrox, thoughtfully. "I should not be surprised if Paris might one day claim recognition as the Pittsburg of France."—Washington Star.

English Coffee.

The American opinion of coffee as understood in the English home is not high, and how the coffee of the English lodgings is esteemed may be understood from the following traveler's tale. It was his first morning in London "apartments," and his landlady came up with the breakfast, and as he began the meal opened a slight conversation.

"It looks like rain," she said.

"It does," replied the American; "but it smells rather like coffee."—London Chronicle.

The Master Plumbers' Forum

WHAT FR. STRITCH REALLY SAID.

Editor's Note: In view of the wide publicity given by the daily press of the country to a garbled report of the remarks made by Rev. Fr. Stritch, of Detroit, before the recent national convention of master plumbers, we have asked the reverend gentleman to give our readers the benefit of an authentic statement of his views on the matters which he discussed.

None of those who heard the original address could mistake the earnest purpose back of the speaker's words. His manner, no less than his words, conveyed the idea of friendly suggestion rather than of hostile criticism. It is unfortunate that in the newspaper account of his remarks everything favorable to the plumbers was eliminated and his address made to appear in the light of an unqualified attack upon their business methods. We are glad of the opportunity to give our readers an accurate account of what Father Stritch really said. His letter follows:

Detroit, Mich., July 24, '09.

Editor "Domestic Engineering," Dear Sir: Because of the alleged unfairness of the partial reports of my address to the National Association of Master Plumbers, given at their recent convention in Detroit, I have been requested to put my opinions into a shape suitable for publication in your journal. In complying with that request allow me to quote a letter received from one of the master plumbers present in the convention.

"Ottawa, Kansas, July 3, '09.

"Rev. Father Stritch, Detroit, Mich.

"Dear Sir: As a delegate to the convention of the National Association of Master Plumbers, I listened to your able address. I hope the officers were thoughtful enough to send you a full report of the meeting, and especially the report of the Sanitary Committee. In case they have not done so I wish you would write to President Walter D. Nolan, 721 14th st., N. W., Washington, D. C., for the same, for I dislike to have so able a man as you are have a wrong idea of our Association.

We have, as an Association, spent over $3,500 in the investigations of the Sanitary Committee, with results which will save the people of the United States millions of dollars. There is, in my opinion, **no organization in existence that deserves the thanks of the public so much, and yet get so many kicks as the plumbers.**

I inclose a little advertising booklet that I issued here that will convince you that we are not "wasting the solder" here at least, and I hope that if you find that you have done the plumbers of the United States an injustice, that you will endeavor to correct the same as publicly as you seemed to condemn them.

Yours truly,

A. P. Elder."

This is a manly appeal for fair play and it deserves consideration. It contains some statements and implications which we may express with greater explicitness as follows:

1. The master plumbers have shown an enlightened interest and incurred large expense for the public good through the investigation of their Sanitary Committee.
2. No other business organization is more deserving of the gratitude of the public.
3. Yet, instead of this gratitude it receives from the public more kicks and abuse than any other class of business men.
4. I seem in my address to have done the plumbers a serious injustice.
5. If, on reflection, I realize that I have been unjust, I ought to make reparation in a way as public and emphatic as was my arraignment in the convention.

The first and third of these statements may be admitted so far as the facts are concerned, I fear some will question these motives, though I myself do not.

The second statement the public will certainly deny, though the little volume of testimonials in favor of the writer of the above letter would seem to justify the claims in his particular case. No doubt there are among the master plumbers many other men of the same stamp of integrity and efficiency.

Now, after reflection, I do **not** feel that I am called upon to make any reparation. Several of the plumbers individually told me as much. But while I do not apologize I may explain.

I felt that it was an honorable distinction to be invited to open the convention. I had no personal grudge of any kind against the master plumbers. As you may remember I went over in detail the considerations in their favor.

I acknowledged that they were known as men liberal in charities, lenient in collection, less blameable for abuses than the Journeyman Plumbers' Union, as honest in their transactions as other classes of business men who are subject to much less bitter criticism. And I accounted for this by the fact that **the abuses in other lines of business are comparatively hidden,** while those of the plumbers come directly under the observation of their patrons.

Does this look like hostility or prejudice?

What I did not and could not deny and what the writer of the above cited letter admits, is that **the public in general look upon the plumbers in general as guilty of serious abuses in their business.**

The main charge urged in support of this unfavorable opinion is that the plumbers waste time and material, for both of which the consumers are obliged to pay.

From the ball game of the Chicago Master Steam Fitters versus Boiler and Radiator Salesmen held at Ravinia Park recently. Some familiar faces seen in the bleachers, Messrs. Phillips, Powers, Wilcox, Widdicombe, Walker and others. Photograph by Mr. Louis Bruch.

A further charge against the Master Plumbers' Association in particular is that they will not allow the consumer to purchase apparatus from the factory or the jobber. This, if true, is considered an indictable offense against the laws forbidding restraint of trade.

I mentioned and explained these charges and the resulting public feeling. I made no charge whatever on my own account. You surely will not consider it prejudice or hostility or injustice on my part to tell the master plumbers assembled in convention—to tell them candidly of the unfriendly attitude of the public towards them and the grounds, real or imaginary, on which that opinion is based.

The interest of the plumbers requires them to correct these abuses if they exist, to correct the false view of the public if these abuses can be shown to be nonexistent. I gave them an excellent opportunity of doing one or the other by bringing up the matter in the convention.

I next referred to a fact I discovered on inquiry just before the convention. In a certain district in Detroit where the people generally own their own homes I found that **less than half of these homes were equipped with proper plumbing.** The sole reason alleged was the exorbitant prices of the plumbers.

This suggested to me the following consideration: Where plumbing is now put into one house for, say, five hundred dollars, let it be put into two houses for nine hundred dollars or less. Five remarkable and desirable consequences will follow on strict logical and economical principles:

1. The plumbers' business will be doubled.
2. The prices charged by jobber and manufacturer will be lowered because his market is doubled.
3. The plumber can and will, by the very supposition, lower the consumer's expense, while
4. He increases his own profit.
5. Lastly, the public will appreciate the effort to bring to every home, and hence to the community in general, more comfortable and sanitary conditions. The unkindly feelings now cherished toward the plumbers will then soon disappear.

It may be argued that some or none of these consequences would really follow. I am somewhat familiar with the laws of political economy. These conditions **will** follow **if natural laws are allowed to work.** They may not follow if artificial associations interfere with the operation of economic laws instead of following their guidance.

The rest of my address was of an exhortatory character. I pointed out the danger of giving the public real or plausible grounds for believing that they are the victims of the exploitation of selfish organizations, trusts or monopolies of any kind.

I illustrated that danger by considering the doctrines and the practical programs of the socialists, according to which capitalism and industrial class distinction would be swept out of existence.

I urged the adoption of **the golden mean, where right reason and the Ten Commandments would be our standard in all business transactions.**

I advised the plumbers assembled in convention to keep in mind during their deliberations that **their own interests could not be permanently advanced save in subordination to the principles of justice and fair play to all men concerned,** whether represented in that convention or not.

All this reasoning, advice and exhortation was given in **a friendly spirit,** and would have been given substantially unaltered to any other body of business men that I might happen to address.

If these views had been adopted and given to the public as a sort of platform of the proceedings of the convention I think the course would have been right and wise.

I had the real interests of the plumbers, as well as those of the people, at heart. I have them at heart still, and I should be glad to serve a body of men whom, on the whole, I believe to be **as honest and useful as any other class of business men.**

The plumbing business is now under close scrutiny. **The results will vindicate honest and capable plumbers,** such as the writer of the above letter. **Dishonesty and incapacity will be put out of business** and the trade will be freed from the evil reputation which, unfortunately, it has, rightly or wrongly, acquired.

Yours sincerely,

Detroit College. **M. I. Stritch, S. J.**

ARE CONDITIONS IN THE PLUMBING TRADE NOT BETTER THAN TWENTY-FIVE YEARS AGO?

By a Master Plumber.

The National Association of Master Plumbers recently held its twenty-seventh annual convention. It has been in existence for over a quarter of a century. At these conventions were gathered the brightest minds in the plumbing business. Many excellent resolutions were passed at different times. I have watched the work of these conventions for many years; but, have we been successful in securing the position in the business world that our business justifies? I do not believe that a single member of the National Association of Master Plumbers will take the position that we have improved the conditions in the plumbing business. The improvement has been in the methods of construction, the materials and fixtures used. Laws have been enacted in many places to compel the plumber to install the work in a sanitary manner. Trade rules have been observed in many places restricting the sale of plumbing material to the legitimate trade. Examination of both journeymen and master plumbers are required in many locations.

I know of no trade or profession that has had a greater amount of "protection." I also know of no business that has suffered so much from destructive competition. Now if my statement is true, and I have yet to meet the man that will contradict it, what is the cause? Have we not made a mistake in permitting the apprenticeship question to remain in the hands of the journeymen? I find no fault with the journeymen for any errors, that they have made on the question; they were doing the best that their judgment and conditions would permit. They were not expected to see further than their own interests. The unrestricted use of apprentices did much to increase the number of workmen. Being unable to secure steady employment at

fair wages, they engaged in the business as master plumbers.

Many men who were so incompetent at the trade (as workmen) that they could not secure sufficient employment to make a good living, were received with open arms into membership of Master Plumbers local associations. In this way they were foisted on the public as competent to serve it, and as an equal to compete with the best trained and experienced. This is only one phase of the question of why we have not improved our business conditions during the past quarter century.

Is it too late to correct some of our errors of the past?

G. F. R.

In Early Days—XXIII

By Herbert S. Renton

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PHILADELPHIA.

Philadelphia is the only city in the world, except London, England, that supports a real old time minstrel troupe. Frank Dumont is the successor of Carncross and Dixie, who held forth at the Eleventh Street Opera House years ago, and rare Hughey Dougherty lectures on the Garden of Eden still.

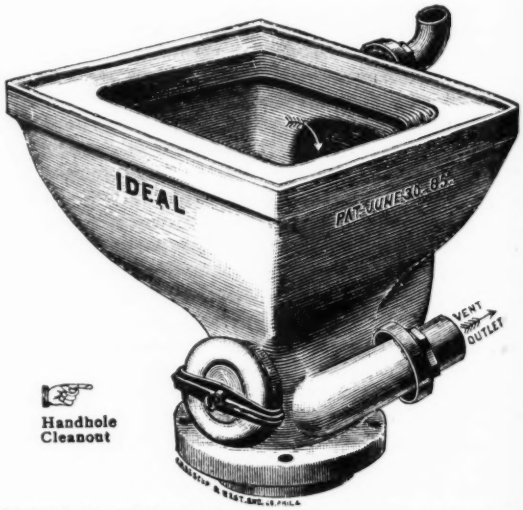
If you want a real dish of oysters Philadelphia rivals Baltimore and furnishes the best in creation. You can have a whole house in the City of Brotherly Love, five and six rooms and bath, for eighteen and twenty dollars a month—fine. They are built by the square mile—beautifully trimmed, neat as wax and reached in twenty minutes via Market street subway. The cars climb out of the subway at Schuylkill river, cross over and continue on an elevated structure to Sixty-ninth street, right out into the country. There is no attempt at variety of ornamentation. Thousands of these two-story dwellings stretch away in the distance, but they look so inviting that the sameness doesn't detract at all from their home-like appearance. The plumbing is all right, too. In the older sections the primitive "kitchen sink and hydrant in the yard" still do service—in the lanes, quaint alleys and courts, but will eventually be superseded by modern sanitary fixtures.

Philadelphia is an economical home town, where people go in for solid comfort. The department stores are the greatest in the world, and some of the skyscrapers on Broad, Chestnut and Market streets are solid as Gibraltar and ornate in architectural embellishment. Philadelphia works the small margins; business that New York despises is profitable in the Quaker City. I noticed gold signs on several restaurant windows reading "Gilt Edge Coffee and Chocolate," and compared with the old town I used to know in the seventies it is a gilt edge, up-to-date city, though what good a "gilt edge" on a cup of coffee amounts to I leave my readers to judge.

Our theme is the ancient and not the modern town.

A little topography first: The Schuylkill river flows through the city, joining the Delaware and forming a peninsula six miles long and from two to four miles wide. The southern end of the city is on a low alluvial land, rising gradually to the north, twenty to forty feet above the sea. West of the Schuylkill the land rises to four hundred feet. William Penn founded the city in 1682; gave it the first charter in 1701, though it was not incorporated until 1789. The original city was two square miles and was not increased until 1854, when the extension included all outlying towns in Philadelphia county.

In January, 1909, I went to Holmesburg on the Pennsylvania railroad, thirteen miles, to visit the Edwin Forrest Home for Aged Actors, and they told me I was still in Philadelphia. Territorially it is a tremendous city, and a large proportion of the people own the homes in which they live. In New York City the percentage is the lowest in the country—about seven per cent. **New York and Philadelphia started water works about the same time, in 1800,** and in the latter city, with Benjamin H. Latrobe as



Richard H. Watson's Patented Ideal water closet with hand hole cleanout, reproduced from the 1884 catalogue of Stambach & Love, of Philadelphia.

engineer, water was first supplied January 27, 1801. The first works were known as the Center Square and were supplanted in 1815 by works at Fairmount Park, water being pumped from the Schuylkill in both cases by steam power. Steam was discontinued in 1822, when the first waterwheel was started. In 1826 the city contracted to supply Spring Garden, Southwark and Northern Liberties; in 1832 the supply to Moyamensing, Northern Liberties and Kensington was discontinued, the two former places having built joint works and Kensington taking water from them until it built works in 1851.

In 1851 a private company built works to supply Germantown, and in 1855 the 24th ward or West Philadelphia was supplied by works begun in 1853. At the consolidation in 1854 all came under the control of the city. Chestnut Hill was supplied by a private company in 1860. In 1866 the Belmont works was

begun, and in 1869 works were built for Roxborough and the supply extended to Germantown, the city having controlled since 1866 works built by a company in 1851. In 1873 the city took charge of the Chestnut Hill works. A system was built (date not given) to supply Frankford, Bridesburg and vicinity. This is the whole story. The first nine water wheels were breast wheels except one, which was a turbine. The wooden wheels were replaced in 1846 by iron wheels after a constant use for 24 years. The total cost in 1852 of running nine wheels was $7.67 a day. It cost one hundred and thirty-three dollars for every million gallons raised by the wheels to the reservoir, or one and three-tenths cents for every million gallons raised one foot. The water was taken from the river along Chestnut street, east of Broad, and then north to the old Penn square, where the public buildings now stand, surmounted by the gigantic figure of William Penn, which the traveler sees for miles before he enters the city. The conduit was four feet inside, built of brick, cemented on top, and was four feet underground. From the Penn square reservoir water was distributed in wooden pipes. The logs were bored and fastened together with hollow plugs of wood tapered at both ends. The inside diameter was four inches. **Hand-made** lead pipe was used to tap the main for the house supply.

Years after the old conduit had been abandoned several householders used it as a sewer, but it choked up when the old Colonnade hotel was connected with it and its use as a sewer was discontinued.

When **Richard H. Watson,** of 1707 Chestnut street, who is **the oldest practical plumber in active service in Philadelphia,** was an inspector of sewers many years ago, he discovered that the round sewers filled up at the bottom with mud that was never washed out, and he suggested a pear-shaped construction, narrow at the bottom, and ever since the first experiments, when they were found to scour clean, the sewers have been built that way.

Mr. Watson began his career in 1851 with **Presly B. & Jos. M. Forsythe,** whose shop was on Seventh street above Chestnut at the corner of an alley then called Jane street. **His apprenticeship was for five years and his salary $75 a year, payable quarterly.** The old apprentice system gave the master absolute control and a bad boy was sometimes sent to prison if he did not behave. Mr. Watson was indentured during **good behavior,** and could be sent home but not to jail if he did not please his master. His employers were among the very old firms. There were not as many native workmen as New Yorkers and foreigners, mostly Scotch or English, who followed the plumbing business.

R. H. Watson, whose photo is reproduced on page XXV in this issue of "Domestic Engineering," is a fine figure of a man today—of large build and handsome form, one can hardly imagine that he has been for fifty-eight years actively engaged in plumbing. From Forsythe's old shop in 1851 to his going into business for himself in 1863 is only a dozen years but for nearly four times that long Mr. Watson has been a leader in the trade. The firm was **Watson & Peole** from 1884 to 1896, before and after that simply Richard H. Watson. Said a prominent jobber to me recently: "If all plumbers were like Richard H. Watson this business would be worth while."

In 1880 **Mr. Watson's Peerless and Ideal Closets** were made by **Stambach & Love,** of 56 N. 7th street, one was **a washout**—the other **a combined hopper and trap. Both had handholes to clean out the trap.** Mr. Watson did not believe in those days in a trap above the floor, but he made a pedestal washout in 1884 which he put into the Bullock Building, one of the first large buildings to go up in the city. This was called the **Mascaret** because the trap was **masked.** Mr. Watson was among the first to make **a syphon jet closet** and **his Toilet Bath Tub** is remembered as one of the earliest departures from the old copper and zinc bath tubs in vogue in the Eighties.

Why He Got His.

The vender of images, who had just been thrown out of a large office building, wept bitterly as he looked at his torn clothes and broken wares.

"Who did this?" inquired the friendly cop. "I'll pinch 'em if you say the word."

"No; it was my fault," said the victim, gathering up the remains of a plaster image. "I insisted on trying to sell a bust of Noah Webster to a meeting of simplified spellers."—Denver Republican.

"His Honor the Mayor." Here is a correct likeness of that popular envoy, Maxwell F. Gilbert, Western New York State representative for the heating department of of the J. L. Mott Iron Works, whose headquarters are at the Iroquois Hotel in Buffalo. He is seen here in characteristic pose, when about to deliver one of his famous "Sun-Ray" orations. The photograph was taken by our Mr. Winslow.

FRISCO JOBBERS EXPECT LOWER FREIGHT RATES

Uruguay, South America, getting ready to buy Plumbing Goods and other up-to-date conveniences

B. F. Sturtevant Co. reorganize and increase capital stock

FRISCO JOBBERS ANTICIPATE LOWER FREIGHT RATES.

Jobbers in plumbing supplies at San Francisco, Cal., are much interested in the report that the traffic bureau of the Merchants' Exchange has won a signal victory over the transcontinental roads in its fight for more equitable freight rates. Henceforth the rates charged for freight carriage from the East to San Francisco via the Panama route will not be dependent on the rates fixed by the transcontinental lines. Heretofore, if the transcontinental rates were increased, there would be an automatic increase in the rates by water and the Panama route. This news, together with the news that a new steamship line would shortly be placed in commission between this port and New York, leads Frisco jobbers to believe that lower rates are a possibility in the near future.

URUGUAY WANTS PLUMBING AND OTHER MODERN IMPROVEMENTS.

Uruguay, South America, is to negotiate abroad a loan of $6,000,000 for public works. This is done in accordance with an act of the congress of that country of June 12 last, a copy of which has been sent to the State Department at Washington. Of the total $2,500,000 is to be applied to road and sanitation work, $1,300,000 to the construction of the government palace, $200,000 for a military and naval academy and $2,000,000 for the construction of the legislative palace. The loan is to bear interest at 5 per cent, with 1 per cent. annually of cumulative amortization by purchase or public bid.

THE B. F. STURTEVANT CO. REORGANIZED.

The B. F. Sturtevant Company, of Boston, Mass., has been reorganized and recapitalized, its capital stock having been increased from $500,000 to $2,500,000, of which $1,250,000 is 6% cumulative preferred stock and $1,250,000 common stock, and the stock has all been taken by a few of the large owners. The old company was incorporated under the laws of Massachusetts, and the new corporation also is organized under the laws of that state. The increased capitalization represents capital expenditures during the past year, largely in the erection of a new plant in Hyde Park, Mass., which cost over $1,500,000, the fan and blower business of the company having increased to such an extent that it was necessary to take that step. It is also planned to build a new addition to the plant next spring. John Carr, chairman of the board of directors of the first National Bank of Boston, is president, Eugene N. Foss is treasurer, and E. B. Freeman has been elected general manager.

INCREASING ITS WAREHOUSE CAPACITY.

United States Sanitary Mfg. Company, of Pittsburgh, Pa., is making extensive additions to its warehouse capacity at its plant at Monaca, Pa.

INSTALLS BRASS FOUNDRY.

The O. H. Jones Company, of Hartford, Conn., manufacturers of ball cocks, which has in the past had its castings made outside, has installed an up-to-date brass foundry at its plant in East Hartford, which will enable the company to increase its output materially.

SECURE AGENCY FOR NEW LINE.

Borg & Hill, of 216 Fulton street, New York, agents for several steam specialty manufacturing companies, have been appointed selling agents for Eclipse Seat Co., of Brooklyn, N. Y., and will handle this line in the States of New York, Pennsylvania and New Jersey.

JEFFERSON PLUMBERS' AND MILL SUPPLY COMPANY INCORPORATED.

The Jefferson Plumbers' and Mill Supply Company, of Birmingham, Ala., has been incorporated with a capital of $17,000 to deal in plumbing and mill supplies. The officers and incorporators are J. J. Lee, E. F. Enslen and C. H. Colvin.

NATIONAL HYGIENIC MFG. CO. INCORPORATED.

The National Hygienic Manufacturing Company, of Columbia, S. C., has been incorporated with a capital of $150,000, to manufacture sanitary specialties. The incorporators are: L. B. Dozier, Dr. W. J. Murray, C. W. McCreary, J. L. Mimnaugh, W. C. Swaffield, Lee A. Lorick, W. C. Abney, W. A. Clark and William Jones. The company has been manufacturing its products at Trenton, N. J., and will continue to do so until a factory is erected in Columbia, S. C.

LEADER IRON'S NEW YORK OFFICE MOVED.

The Leader Iron Works, of Decatur, Ill., has moved its New York office from the sixth floor of the Corn Exchange Bank Bldg., 15 William St., to the fifth floor of same building, Room 529, 530 and 531, where more commodious quarters have been secured to take care of the company's increasing business. The new location is such as to enable them to display Leader goods to much better advantage. A complete water supply system set up in their office will prove of much interest to the trade calling upon them in their new business home.

MUNCIE, IND., WOULD LIKE TO GET VOLLRATH PLANT.

The Jacob J. Vollrath Mfg. Company, of Sheboygan, Wis., may move its plant to Muncie, Ind., as that city has offered the equivalent of $100,000 on condition that its plant be located there. The old plant of the Vollrath company is located in the residence district of

Sheboygan, and considerable difficulty has been experienced in getting a franchise from the city to permit the construction of a side track to the site which the company has selected for its new plant. Considering the amount of capital which the Vollrath plant has invested in Sheboygan, however, it is improbable that they will move to Muncie.

BUILD NEW PLANT AT BRIDGEVILLE, PA.

The Frederick Elder Company, manufacturers of lighting specialties, of Pittsburgh, Pa., are building a new plant at Bridgeville, Pa.

CHAPMAN VALVE CO. AND PRATT & CADY CO. TO CONSOLIDATE.

Stockholders of the Chapman Valve Company held a meeting Monday afternoon, July 26, in the company's offices at Indian Orchard, Mass., at which they voted to issue $300,000 in preferred stock to wipe out the indebtedness of the Chapman Company and went on record as favoring the further issue of $400,000 to be spent in the purchase of the Pratt & Cady Company's interests at Hartford, Conn. According to those who are in close touch both with the directors and the stockholders at large, there is no doubt about an early subscription of the $300,000 by the stockholders. It is learned from Hartford that the directors and stockholders of the Pratt & Cady company are in favor of the merger on the terms proposed, and that it is only a question of a short time when the deal will have been perfected.

MID-SUMMER TOURNAMENT OF EASTERN TRADE GOLF ASSOCIATION.

The Mid-Summer Meet of the Eastern Trade Golf Association was held on the links of the Yountekah Country Club at Nutley, N. J., on Tuesday, July 20. It was one of the most successful meetings of the association in years.

The regular medal play handicap was played in the morning, George F. Brown and R. B. Hunt tied for first prizes, and Mr. Brown was awarded the first prize on the basis of the best gross score. Mr. Hunt took second, C. M. Fink third, F. C. Jennings fourth and W. R. Watters consolation prize. The morning score follows:

	Gross	Hdcp.	Net.
G. F. Brown	91	10	81
R. B. Hunt	106	25	81
C. M. Fink	90	8	82
F. C. Jennings	83	0	83
W. R. Watters	135	35	100
C. N. Brizse	109	11	98
F. C. Greene	109	12	97
A. S. Armagnac	102	12	90
Stephen Roberts	99	10	89
E. E. Gano	97	8	89
M. E. Danforth	94	5	89
F. B. Oliver	102	14	88
C. S. Prizer	94	8	86
W. G. LeCompte	109	25	84
F. B. Barrett	87	3	84
J. B. Garfield	84	0	84

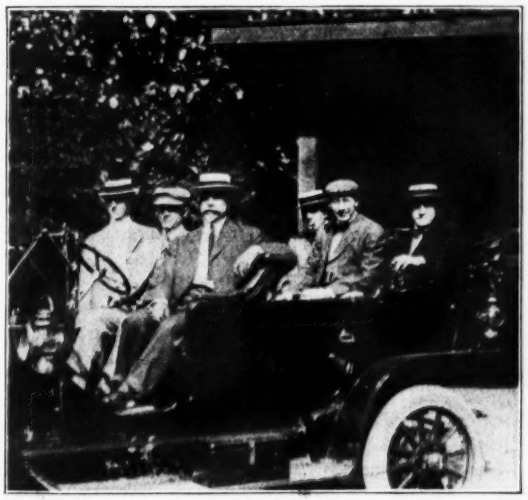
For the afternoon play the players were divided into foursomes. M. E. Danforth and W. G. LeCompte were awarded steins for the best score in this contest. The result of the play follows:

	Gross	Hdcp.	Net.
C. S. Prizer and F. C. Greene	93	12	81
E. E. Gano and A. S. Armagnac	90	12	78
Stephen Roberts and G. F. Brown	87	10	77
F. B. Barrett and C. M. Fink	82	6	76
F. C. Jennings and F. B. Oliver	82	8	74
C. N. Brizse and J. B. Garfield	79	7	72
W. R. Watters and R. B. Hunt	104	36	68
M. E. Danforth and W. G. LeCompte	85	18	67

After the play for the day was over a good four-course dinner was served in the club house at 7 P. M., at which the prizes were presented. Those for the morning play were handsome cups and the consolation prize awarded to W. R. Watters was a silver wire wound cane. A meeting was then held and it was decided to hold the next meet of the association at the Whitemarsh Valley Country Club, Chestnut Hill, Philadelphia County, Pa., upon the invitation of C. S. Prizer and G. F. Brown. This meet will probably be held the third week in October.

OBITUARY

John E. Haviland, a member of the plumbing supply firm of Spencer & Haviland, 174 South Portland avenue, Brooklyn, N. Y., passed on last week under tragic circumstances. He was the owner of the yacht Sakana, with which he won a notable race last fall, and an enthusiastic yachtsman, being a member of the Brooklyn Yacht Club at the time of his demise. As the guest of Lee Herzig, commodore of his club, he was attending the race-week festivities of the Larchmont Yacht Club at Larchmont, N. Y. aboard the latter's yacht, when on Thursday evening he disappeared, and on Sunday, July 25, his body was found floating in the Sound. The Coroner pronounced his death due to accidental drowning. He was forty-five years old, unmarried and lived at 20 Spencer place, Brooklyn.



From the ball game of the Chicago Master Steam Fitters versus Boiler and Radiator Salesmen held at Ravinia Park recently. Messrs. Mehring, Van Auken, Hale, Kennedy, Hart and Drury, who toured to the game in Mr. Van Auken's new car. Photographs by Mr. Louis Bruch.

IRON AND STEEL CENTERS SHOW INCREASED STRENGTH

Advance of $2 a ton in wire products inspires confidence of greater activity in steel and iron.

Old Metal Market shows better condition with higher prices in some quarters.

EASTERN MARKETS MORE ACTIVE.

Chicago, Ill.—In the early part of this week it was announced that wire products had advanced $2. It is expected that this increase will have a favorable effect upon steel bars and plates, and it is predicted in some quarters that an advance will occur in steel pipe about August 2, of $2 a ton. The eastern markets are more active, noticeably in New England where sales amounting to nearly 30,000 tons have been made. The tonnage is appearing to grow in volume as the weeks pass by and the customary dullness during the summer months does not, as yet, seem to have made its appearance. It would appear that the increase in the automobile industry would create a considerable demand for more and finer steel. From conditions noted and estimates made it looks as if something like 65,000 to 70,000 machines will be turned out this year, and the reports indicate that 200,000 are planned for the coming year. In the west, business, speaking generally, seems to be steadily growing and as the favorable reports of abundant crops come in a more active market may be looked for in the future.

COPPER MARKET INACTIVE.

Chicago, Ill.—The greater interests of the country do not, as yet, seem to have bought heavily. There appears to be, according to the reports, a certain amount of business doing with the smaller customers. Exports have been rather light toward the end of the week, but the large selling agencies are holding the price firm.

LEAD MARKET FIRM.

Chicago, Ill.—Reports from the lead centers indicate somewhat better demands but not especially heavy sales. Shipments seem to have been greater than for the week previous which tended to reduce stock.

THE OLD METAL MARKET.

Chicago, Ill.—In the eastern section of the country prices seem to have become firmer and certain metals have advanced to a small extent. A certain amount of activity is inspired from the smaller brass works which are reported to be well supplied with orders. It is believed that there are fair chances for continued activity.

NEW YORK METAL MARKET, JULY 27

Copper, Prime, Lake	$13.50
Copper, Electrolytic	$12.95 to 13.05
Antimony, Cookson's	8.37½
Lead	4.35
Straits Tin	29.25
Spelter	5.45

CHICAGO IRON MARKET, JULY 29.

Southern, No. 2 Foundry	$16.85-17.35
Northern, No. 2 Foundry	17.00-17.50
Lake Superior Charcoal	19.50-20.00

July 29, 1909:

Northern foundry iron 50c more than week previous
50c less per ton than the year previous
Copper was ¼c more than the month previous
½c more than the year previous

CHICAGO OLD METAL MARKET.

Chicago, Ill.—Dealers' buying prices are as follows:

Clean heavy copper and wire	$12.00
Light copper	10.75
Heavy composition	11.00
Heavy yellow brass	8.50
Light brass	6.25
Heavy lead	4.00
Tea lead	3.50
Scrap zinc	4.00
Block tin pipe	24.00

NEW YORK OLD METAL MARKET.

New York.—Dealers' buying prices are as follows:

Heavy Crucibled copper	$11.75 to	12.00
Heavy copper wire	11.25	11.50
Light copper	10.00	10.50
Uncrucibled hy. copper	11.25	11.50
No. 1 machinery composition	11.00	11.50
Plumbers cocks and faucets	9.00	9.50
Heavy brass	8.25	8.50
Light brass	6.00	6.50
New brass scrap	8.50	8.75
No. 1 brass turnings	7.25	7.50
No. 1 composition turnings	8.25	8.75
Block tin pipe	26.50	27.25
Solder joints	6.25	6.50
Heavy lead	4.00	4.10
Tea lead	3.75	3.85

PLUMBING LEGISLATION

WANT CLEVELAND CODE AMENDED.

Cleveland, O.—A committee representing the Master Plumbers' Association appeared before the council committee on building code and ordinances this week and asked that a number of minor changes be made in the plumbing code. An amending ordinance will be drawn up and referred to a committee representing the Builders' Exchange, the Master Plumbers' Association, the journeymen plumbers, the Cleveland Chapter of the American Institute of Architects, the Chamber of Commerce and the board of education. It will be remembered that a committee representing these organizations was called upon for advice while the plumbing code was pending, and the council committees believe that the proposed changes should be passed upon by representatives of the same organizations.

ASSOCIATION NEWS

TRENTON MASTER PLUMBERS ENJOY ANNUAL OUTING.

Trenton, N. J.—Tuesday, July 27, after weeks of untiring labor in preparation and arrangement, the annual outing of the Master Plumbers' Association of Trenton was held at the Inter-State Fair grounds. This was the seventh time the plumbers have met at these annual gatherings and too much cannot be said in praise of, not only the able manner in which every detail was arranged by the "expert fitters" who had the matter in charge, but the spirit of harmony and goodfellowship that characterized each feature of entertainment throughout the day.

The party met at city hall about 9 o'clock and the first section, composed of the committee, left shortly after for the Inter-State Fair Grounds, about five miles out of the city, where untiring Bill Cody was found unpacking the provisions that had arrived some time earlier on Slack's double truck, together with a portable lunch counter and seats to match. From the appearance of the place at 9:30, Cody must have been on the job all night. It was a busy morning for the committee, preparing the dinner for the merrymakers that were arriving in half and dozen lots on every car. The work ceased at noon with the cutting of the last watermelon and they needed no second invitation to find a seat and help themselves; for those who were not catching were playing quoits until even the table legs were palatable enough to satisfy their increasing hunger. There was variety enough and plenty of everything to satisfy the entire State Association and the picnickers left the grove well fortified for the diamond.

Teams were selected from the supplymen and plumbers and in seven innings the usual defeat of the plumbers was announced to the tune of 21 to 14. The line-up follows. Positions are not stated, because that would make a story in itself. The only man that held down the same position in two successive innings was Fell, first baseman for the plumbers, and star of the day:

Salesmen—	Plumbers—
Munder	Whitehead
Black	Schemerhorn
Openshaw	Piper
Boyd, Walton	Black, Fell
McCormick	Sisti
Titus	Cody
Hammell	Gregory
Bibbins	Slack
Cocker	Hunt

Chief Plumbing Inspector George W. Feaster umpired; he knows something about the game too. G. V. Hunt on the plumbers' team is still figuring out why a diamond is not a triangle.

Two races were run during the day. Dixon came in first in the fat men's race and Gordon Black took the prize in a 100 yard dash. Little remains to be told of this thoroughly enjoyable outing. After the game the grove was again sought where the committee who forever had in mind the comfort of their guests had steaming clams on the stones, and hot bow-wows on the irons. The last bottle of the amber liquid was drained just as a clap of thunder and flash of lightning proclaimed the day, that had been all that could be wished for, at an end, and the merrymakers meandered their way homeward.

It was a happy but tired crowd that left the grounds, preceded by Scoty's hurdy-gurdy, with a hearty vote of approval upon the efforts of the association and the committee who had the arrangements in charge. This was composed of W. F. Cody, chairman; Walter Margerum, Daniel Sisti, George B. Hunt and Harry Griener.

The supply houses responded liberally to the call of the committee as did the city departments. Among the guests noticed were: Sewer Supervisor R. M. Hammell, Al. Bugby, Superintendent of the Water department, Tom Holmes, secretary; Dr. Bowers and Dr. Fell of the health board; Chief Plumbing Inspector G. W. Feaster and Meter Inspector "Scoty."

NORTH SHORE PLUMBERS WILL HOLD PICNIC.

Evanston, Ill.—The North Shore League of Master Plumbers will hold its third annual basket picnic at Electric Park, Waukegan, Ill., on Saturday, August 14. A special car for the party will leave Evanston at 9 a. m., sharp, and on the return trip cars leave the park at 7 p. m. A royal good time is anticipated by all who plan to attend the outing of this rapidly growing association.

MANHATTAN PLUMBERS FIX DATE FOR CLAM BAKE.

New York, N. Y.—The annual outing of the Manhattan Branch Association of Master Plumbers will be held on Thursday, September 9. A steamer has been chartered to take the party up the Sound to Glenwood, L. I., where the usual clam bake will be prepared at Karatsonyi's Park.

PATERSON PLUMBERS READY FOR ANNUAL OUTING.

Paterson, N. J.—The Paterson Association of Master Plumbers have just announced the arrangements for their eighth annual outing. The date is Saturday, August 7. Everybody knows the place is Coney Island and Louis Stanch will prepare the dinner. The committee has everything arranged in grand style. The train leaves Paterson at 7:26 sharp. Geo. S. O'Neil is chairman of the committee and is assisted by J. H. White, secretary; John Baker, Robert E. Quinn, J. J. Maher, Bob Beaumont and Frank Vreeland.

NEWARK PLUMBERS TO HOLD ANNUAL OUTING.

Newark, N. J.—The Master Plumbers' Association of this city will hold its sixteenth annual outing and clam bake on Thursday, August 12. Elaborate preparations have been made for the comfort and entertainment of the picnickers, and a repetition of the good time and spirit of good fellowship that has characterized this auspicious event in the past is assured. The place is Port-Au-Peck, on Pleasure Bay, and Wardwell will again serve the clam bake.

NEW YORK PLUMBERS TO ENFORCE ARTICLE THIRTY-SIX.

New York N. Y.—The Joint Ways and Means Committee of the Association of Master Plumbers and Locals 480 and 498 of the United Association of Journeymen Plumbers and Gas Fitters of New York, by reason of various and numerous encroachments on the trade as well as infringments of their rights by other trade organizations, have unanimously endorsed the following resolution:

"That Article 36 of the current agreement between the aforementioned parties be rigidly enforced, and for the enforcement of said article we pledge to each other our moral as well as our material co-operation and support. This article of the joint agreement, entered into between the above mentioned parties and signed in August, 1908 reads as follows:—

"Article No. 36. In view of the various encroachments on our industry, made by other trade organizations, we do the following work:

"(A.) All piping for gas, water, waste, soil and vent lines.

"(B.) All piping to and from and around water filters and water meters, also all piping for hot and cold water, for domestic and culinary purposes.

"(C.) All pneumatic and thermostatic systems and dust suctions; also all fire lines of every description, including water sprinkling or other purposes; also all piping for other purposes when solder is used for putting pipes or tubing together. All water supplies to and discharge from pumps. All temporary suction and discharge pipes for sub-soil or other drainage or sewerage systems. All temporary water supply lines for building construction use. All stand pipes taking place of tanks. All ice box and refrigerator waste pipes; also to hang and fit up all hot water tanks and boilers; also connect pipes leading to and from heaters of every description.

"(D.) All ice machine work.

"(E.) To cut and fit all pipes to and from ranges to boilers.

"(F.) To set all plumbing fixtures; also fit up all toilet and bathroom auxiliaries, such as soap and sponge holders, paper holders, towel racks, glass shelves and medicine closets, furnished by plumbing manufacturers, all water gas and waste to and from all laundry machines, also all compressed air work."

A copy of the resolution has been sent to all architects, builders, general contractors and sanitary engineers with a letter urging them to insist that all work mentioned in the above article be placed where it properly belongs, in the plumbing specification, and so avoid, possibly, serious complications, with consequent delays in the completion of their projects.

Milwaukee, Wis.—W. H. Halsey, ex-president of the National Association of Master Plumbers, has been awarded the contract for the sewer and water connections in the new plant of the A. O. Smith Co., to be erected at a cost of $500,000. Mr. Halsey will probably also be awarded the plumbing contract for this plant. Some idea of the size of the plant can be gained from the dimensions of the main building, which is to be 800 by 285 feet.

NEWS FROM PENNSYLVANIA

Johnstown Pa.—F. B. Ringler & Sons have succeeded to the plumbing business formerly run at 507 Franklin street by F. B. Ringler.

Chambersburg, Pa.—S. H. Gillan, of 377 East Queen street, is doing the plumbing in the new residence of Daniel Grove. He is also installing modern plumbing in the residence of Mrs. Crawl.

Tyrone, Pa.—Walter Burley, formerly associated with the Tyrone Plumbing, Heating & Supply Company, and who, since severing his connections with that concern, engaged in business for himself, is erecting a new shop at 1401 Bald Eagle avenue, which, in the future, will be the home of his plumbing business. He would be glad to receive catalogues of plumbing supplies and specialties.

Harrisburg, Pa.—M. H. Baker, of 1411 Derry street, has some $23,900 worth of plumbing, heating and sanitary sewer work under contract at present. The work consists principally of operation work in the city. Among the contracts are 30 houses for B. H. Engle in the neighborhood of 18th and Whitehall streets, 15 heating systems and 45 complete plumbing outfits in various sections of the city.

Waynesboro, Pa.—Adams & Cline are having their usual run of good work this season. The following are a few of their contracts under operation at present: Plumbing and hot water heating in H. G. Hackman's new residence, hot water heating for Dr. C. Beard, hot water heating for Clayton Phillips, hot water heating for Wm. Hoffman, plumbing in new residences of D. W. Zenkland and Guy Price.

O. T. Carson.

A. ASCHAFFENBURG RETIRES FROM PLUMBING BUSINESS.

New Orleans, La.—A. Aschaffenburg, of 821 Baronne street, has retired from the plumbing business and a new corporation will be formed under the name of The Aschaffenburg Company, which will continue the business. Mr. Aschaffenburg will have no financial interest in the new firm.

PUBLIC COMFORT STATIONS FOR MILWAUKEE.

Milwaukee, Wis.—The movement in favor of public comfort stations to be installed at the various bridges and viaducts has culminated in a resolution drawn up by Alderman Edmund T. Melms, which will be acted upon at the next meeting of the common council, to take preliminary steps in this direction.

SECURE NICE HAVANA CONTRACTS.

Havana, Cuba.— Cristino F. Cowan, sanitary engineer of Purdy & Henderson's branch in this city, has just secured a nice contract for his firm in that of the plumbing and hot water supply systems for Hotel Pasaje in this city. The consideration is $12,500 in U. S. currency. This firm has just started work on the plumbing system for Hotel Inglaterra, a contract which amounts to $22,000.

PITTSBURGH AND VICINITY

Pittsburgh, Pa.—The contract for the hot water heating system for the new $15,000 residence that is being built in the East End for W. W. Giffen has been awarded to E. C. Hock, of this city.

Pittsburgh, Pa.—Deckenbough & Banks, Mount Washington, this city, have been awarded the contract for the plumbing for the new business block that is being built in that section of the city for P. J. Finnegan.

Littlestown, Pa.—A. W. Thatcher, who was connected with the Thatcher Plumbing and Heating firm, at York, Pa., until very recently, has opened a plumbing and heating establishment at Littletown. He will be pleased to hear from jobbers and manufacturers of plumbing and heating goods.

Pittsburgh, Pa.—The contracts for the plumbing in the three new two-story apartment buildings being built on the North Side for Agnew & McAllister have been awarded to E. H. Erhardt, 401 Lawrence street. The contracts call for the installation of twelve complete bath rooms.

Pittsburgh, Pa.—The contract for the steam heating system specified for the new $20,000 apartment building that is being built this summer for L. H. Fellabom, has been awarded to O. W. Logan, of this city. Mr. Logan has also recently received the contracts for heating several high class residences now being erected here.

Pittsburgh, Pa.—The contract for remodeling the plumbing system in the Hotel Dorset in the East End has been awarded to J. M. Rodgers, 5966 Ellsworth avenue. New fixtures will be installed in six of the bath rooms in the building, and the plumbing in the remainder will be entirely torn out, although some of the old fixtures will be re-installed.

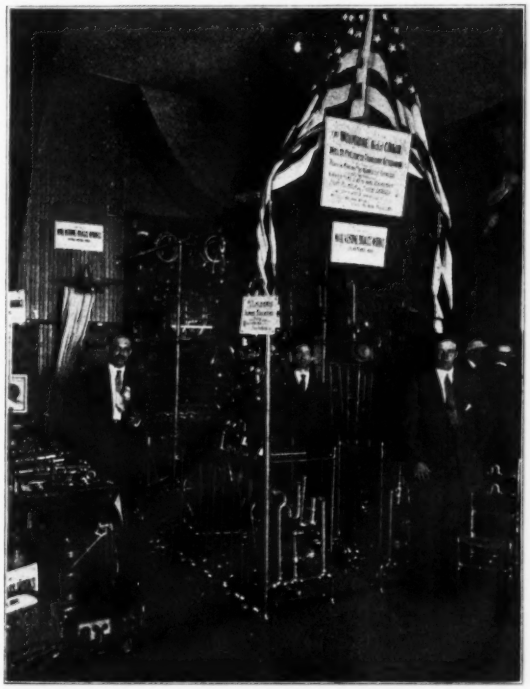
Pittsburgh, Pa.—The contracts for installing the plumbing system in two high class modern residences that are being built this summer in the East End for S. A. Dickie & Company, have been awarded to the Union Plumbing & Burner Company, of this city. Each residence will contain two well equipped bath rooms, kitchen and laundry equipment.

Pittsburgh, Pa.—The contract for the plumbing systems that will be installed in the block of five new residences being built in the East End for Ott Brothers, of this city, has been awarded to the Boore Plumbing Company, of the East End. The contract is an excellent one, as all of these residences will be equipped with the finest sanitary fixtures and specialties on the market.

Ambridge, Pa.—The award of the contract for the plumbing in the new municipal building being built here has been made to Dyson Bros., of this place. The contract calls for a large number of fixtures, all of which will be of the highest grade. There will be two large toilet rooms in the building. Dyson Bros. also advise that they have been awarded the contracts for plumbing several new residences that are being built here this summer.

Pittsburgh, Pa.—The contract for the elaborate plumbing system that will be installed in the new $30,000 apartment building being built in Knoxville for C. C. Hamilton, has been awarded to the Knoxville Plumbing Company, 137 Bausman street, Knoxville, this city. There will be thirteen high class modern bath rooms installed, all of which will contain high grade enameled iron sanitary fixtures. In addition to this contract, the Knoxville Plumbing Company reports that the contracts for a number of new residences in that section of the city have been signed up, and that the concern is being kept very busy, with all men working.

Pittsburgh, Pa.—Charles Ruckel, who has been engaged in the plumbing contracting business for some years past, at 4200 Penn avenue, has moved his establishment to larger and better quarters almost directly across the street at 4203 Penn avenue. He is fitting up a most modern establishment, which will be equipped with the most improved tools and apparatus for conducting his business. He will also have a modern show room in the front of the first floor, while the shops will be located in the basement and a store room in the rear. He is very busy at the present time and has a large amount of residence plumbing on hand.



The attractive exhibit of the Wolverine Brass Works, of Grand Rapids, Mich., at the recent convention of the National Association of Master Plumbers, in Detroit, Mich. The chair presented to Chas. E. Harrison, of East Orange, N. J., can be seen in the lower right corner of the picture. Reading from left to right the gentlemen in the picture are: E. A. Pinchin, Walter H. Brooks and President L. A. Cornelius. These gentlemen were in charge of the exhibit and explained the functions of many of the articles shown.

PACIFIC COAST

INCREASED ACTIVITY IN BUILDING AT SAN FRANCISCO.

San Francisco, Cal.—As the summer advances building operations increase in this city and during the past two weeks there has been a marked increase in the number of building permits taken out and contracts awarded. At the present time extremely low prices are ruling on lumber and most of the buildings now being erected are of frame construction outside the fire limits. There are but few new structures being started in the downtown district but large numbers are now being finished and plans are being made for a number of other important ones. It had popularly been supposed that San Francisco now had plenty of hotel room with the many fine new structures that have been opened within the past two years at the disposal of guests, but these have been filling up so rapidly of late that additional accommodations of this character have become a necessity. The arrival of 15,000 Elks from Los Angeles this week, on their way up the Coast, showed that more room was needed and builders have been encouraged to turn their attention again to structures of this class.

ELABORATE VENTILATING SYSTEM NEARING COMPLETION.

San Francisco, Cal.—Within the course of the next month the Robert Dalziel, Jr., Company, expects to finish its work on the ventilating system in the new Palace Hotel. The system in this building is considered to be the most perfect of any that has ever been installed here, as well as the largest, and in planning it provisions have been made for the additions to the hotel that will be made as soon as the present structure is in good running shape. When completed the ventilating system will have taken 105 tons of galvanized sheet-iron to complete it, and twenty direct-connected electric fans, ranging in size from 60 to 150 inches. One of the features of the ventilating system is the provisions that have been made for ventilating the bathrooms, of which there are at present 650. An exhaust register is placed in the ceiling of each room and five fans on the roof are used to discharge the air. Many of the rooms, such as the grill rooms, ladies' parlor and ball rooms, have separate systems. The intake ducts lead from the roof to the basement and the fresh supply is purified by passing through three cleansers with a capacity of about 250,000 cubic feet per minute.

FINE HOSPITAL CONTRACT FINISHED.

San Francisco, Cal.—An important contract that has just been finished in this city is the new Southern Pacific hospital, declared to be the finest institution of its kind in the world and the largest on the coast. The plumbing fixtures throughout this structure are of solid porcelain and many articles installed there are of special design. The contract was carried out by the John G. Sutton Company and the United Builders' Supply Company. The hospital has just been opened by the railroad company.

San Francisco, Cal.—J. H. Brooks & Son have moved to new quarters at 869 O'Farrell street.

San Francisco, Cal.—The Roth Horbst Company has contracted to do the plumbing and gas fitting work for Mrs. Weltz for $1,500 in a residence to be erected in Presidio Terrace.

Santa Rosa, Cal.—P. Geo. Sullivan has received the contract for heating the Sebastopol Bank at Sebastopol, Cal., at a consideration of $1,200. Owner, W. W. Monroe; architect, A. L. Coffey, of San Francisco, Cal.

San Francisco, Cal.—The Board of Supervisors has passed a bill authorizing and empowering the Public Works Commissioners to require all owners of underground pipes to readjust them where they conflict with the city's pipe system, and, if this not done, authority is given the city to do it at the expense of the individual or corporation owning the interfering property.

San Francisco, Cal.—An important announcement has just been made, indicating that William R. Hearst is making preparations for the erection of an office building on his lot at Third and Market streets. This will be welcome news to San Franciscans, as it will fill one of the few remaining gaps on Market street, and, if the plans announced are carried out, the tallest, as well as one of the most attractive buildings in the city, will be put up. It is understood that the work will be done by Mahoney Bros., and that this firm is now working on the plans with a view of soon commencing operations.

TRADE LITERATURE

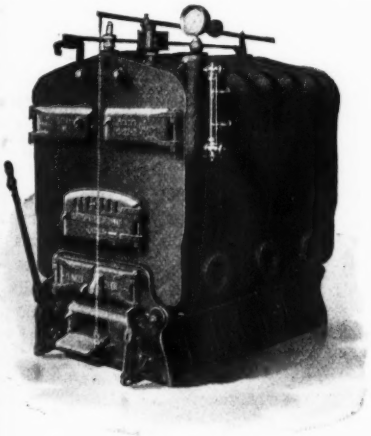
From Joseph Dixon Crucible Company, Jersey City, N. J.—"Valuable Graphite Products," a booklet, 22 pages 3½x6¼ inches, in a dark grey mottled paper cover, giving information as to graphite, its price and application to all kinds of machinery as a lubricant. Attention also is called to the crucibles of plumbago, and various other specialties are shown and described.

From Shirley Radiator and Foundry Company, Indianapolis, Ind.—"Shirley Boilers," 36 pages 3½x6 inches, and "Shirley Radiators," 44 pages, 3½x6 inches, giving detailed information as to sizes, rating and capacity of the various boilers and radiators manufactured by this concern. These catalogues are fully illustrated and contain information of various specialties which are produced by the company.

From Kroeschell Bros. Company, 47 Erie street, Chicago, Ill.: A card, 3x5½ inches, upon which appears some very useful information for the boys who are handling the tools every day. An illustrated explanation is given as to how to measure and estimate the length of pipe required in making the distance by any angle from 1/6 to 1/64. This card would be a mighty convenient article to carry in the pocket and also one might find time to read about the Ideal Chain Wrench, full information about this tool being given on the reverse side of this useful card. Kindly mention "Domestic Engineering" when writing for it.

Labor-Saving Helps.

It's the little labor-saving devices on a first-class Boiler having large heat-making capacity, which help to make that capacity most elastic, most controllable and of highest value to the house-owner. A strong chain of good heating results is the product because there are no weak links due to difficult regulation.



IDEAL STEAM BOILER

On left hand is an easy shaker. The left rod on top regulates smoke damper from front. The Sylphon Regulator keeps the dampers just right. The gauge tells the pressure, and the column under it has a siphon trap and best of try-cocks to test water heights. All simple and "easy to run".

This fact sums up one of the strongest points in IDEAL Steam and Water Boilers. The accompanying picture tells a story of many modern improvements which make it easy to run and regulate the Boiler. Each fitting shown is made and selected with reference to better heating results, better control, easier care-taking; and all this produces the largest degree of satisfaction with the least amount of coal. These small features (not equaled and often not found at all in other Boilers,) help to make the IDEAL the easiest Boiler to sell.

AMERICAN & IDEAL
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Philadelphia	Boston	Milwaukee	Minneapolis	Seattle	St. Louis
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CONVENTION DATES.

August 9, 10 and 11, 1909.—Annual convention of the **International Acetylene Association** in New York City. Headquarters at the Hotel Knickerbocker.

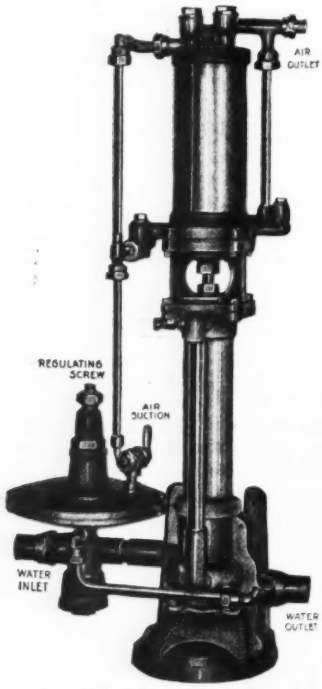
August 24 and 25, 1909.—Regular quarterly meeting of the **National Association of Brass Manufacturers** in Detroit, Mich.

September 15 and 16, 1909.—Annual convention of the **National Association of Master Plumbers of the Dominion of Canada,** at Montreal.

WITH THE MAKERS

THE RELIABLE AUTOMATIC HYDRAULIC VACUUM PUMP.

The Bishop & Babcock Company, of Cleveland, O., manufactures the Reliable automatic hydraulic vacuum pump, shown in the accompanying illustration. This pump starts and stops automatically and is said to be especially adapted for use in connection with vacuum heating systems or any similar purpose where a dependable automatic vacuum pump is required. It is made in five sizes, adapted to different water pressures and pumping capacities for economical operation under various conditions, and larger sizes can be made to order. In the smaller sizes the lower half is a double acting motor, operated by city water pressure, while the upper half is a double acting vacuum pump. In the largest size in stock the cylinders are reversed. The whole device is automatically stopped and started by the automatic cut-off valve, which is adjustable to any degree of vacuum from 2 to 25 inches, and will operate to cut off and start on a variation of one inch of vacuum, equivalent to one-half pound pressure. The pumping piston is packed with a special leather which is unaffected by hot water or steam. This pump is constructed entirely of brass with heavy seamless drawn cylinders, making it a reliable, durable and efficient device. Interested parties can obtain a new folder containing full particulars on request from the manufacturer if they will mention "Domestic Engineering."



The Reliable Automatic Hydraulic Vacuum Pump.

Good Season for National Tanks.

National Steel Tank Company, of Pekin, Ill., reports that the present dry and hot season has created a most gratifying and increasing demand for its "National" pneumatic storage and **hot** water tanks. This company is composed of practical and experienced men, who understand the needs of the trade. Every tank that leaves their factory is subjected to a severe test and a guarantee to the effect that "it is absolutely airtight" goes with it. Master plumbers not yet posted on the "National" tanks can obtain complete information upon request.

The Pittsburg Sanitary Manufacturing Company at the Detroit Convention.

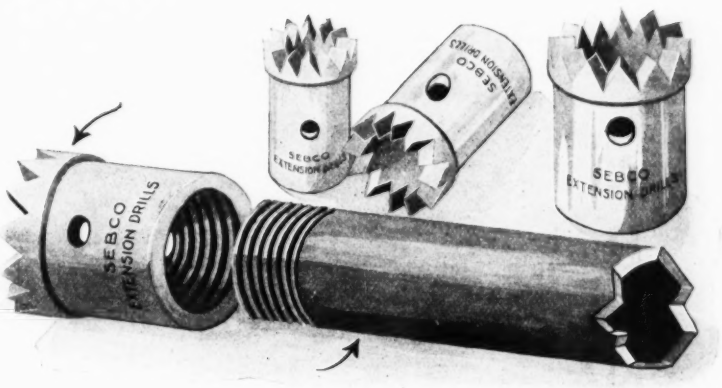
Delegates and visitors to the Detroit convention were treated to a surprise and a demonstration of real, simon-pure, dyed-in-the-wool originality in advertising methods. All of which is tantamount to saying that Geo. H. Bailey the President of the Pittsburg Sanitary Mfg. Company, of Pittsburg, Pa. knew what he was doing when he sent Ralph Hughes to Detroit as the exponent of the merits of its Steel King closet tank.

Persons in the vicinity of the display of this tank were mystified at intervals by the sight of a well built seemingly sane and not unattractive man leaping into the air and descending on an object that, to the uninitiated, looked like a porcelain box. And how that man could jump—must be a bunch of medals and other trophies hanging around that fellow's bungalow. But there was method in his seeming madness. He was demonstrating the fact that it is almost impossible to dent or scratch the "Steel King" tank. The accompanying illustration gives one an idea of the class attached to the aviating abilities of friend Ralph. Another little idea that he put across was the introduction of a little tin pail containing five small bone cubes with spots on them, said cubes being intimately associated with the terms "come seven" and "Pheobe dice." Accompanying the production of the little pail and contents was a proposition to the effect that it was "one flop—no horses" whether you got a "Steel King" tank for nothing or signed an order for a sample dozen. Far be it from us to say anything about Ralph's "affaires de coeur" but we strongly suspect that he has more than a nodding acquaintance with Dame Fortune, that fair and elusive lady being in close attendance on the debonair custodian of the little cubes. Altogether the "Steel King" tank and the methods of its demonstrator made an impression on the delegates that won't be effaced for many moons to come.

Ralph Hughes in his aviating stunt at the Detroit convention.

The Sebco Improved Extension Drills.

The **Star Expansion Bolt Company,** of 147 Cedar street, New York City, has recently placed on the market a new line of extension drills for brick, stone or concrete, designed for use with an ordinary piece of gas pipe, the interior of the drill head being threaded so as to take an ordinary piece of pipe of a given size (See accompanying illustration). These extension drills will be known under the name of the "Sebco," and the manufacturer claims that they are superior in design, finish and wearing qualities to any other drill of a similar type on the market today. They are made in any size from 9/16-inch to 4 inches in diameter, and four to a set are packed neatly and concisely into small wooden boxes, plainly labeled. For quick effective work, in brick, stone or concrete, these drills are recommended, and a very important point to bear in mind is that a set, or even two or three sets, comprising every possible size can be carried very handily in the pocket and one can almost always find a piece of pipe on the job. They are the latest product of the Star Expansion Bolt Company, of New York, Chicago, San Francisco and New Orleans, which will be glad to send a copy of its new catalogue with complete information to those of our readers who are interested enough to write for it.



Sebco improved extension drills.

Washington, D. C.—Sealed proposals will be received at the office of the Supervising Architect James Knox Taylor, until 3 o'clock p. m., August 30, 1909, for the construction (including plumbing, gas-piping, heating apparatus, electric conduits and wiring,) of the U. S. Post Office at Paris, Kentucky, in accordance with the drawings and specifications.

CAPITOL BOILERS AND RADIATORS

Capitol Foot Rests

The most practical and convenient foot rest yet designed. Simple construction, and easily attached to any make, width or height radiator. Can also be set in horizontal position, making it adapted for foot warmer or plate warmer as desired. When not in use can be closed flush with the side of radiator.

Furnished either in plain iron or nickel-plated.

This is a fine specialty for the up-to-date heating contractor to have in stock at all times, a strong seller, as everybody who sees them wants one or more.

Attach one to a radiator in your show window and note results. You'll be surprised what an easy seller it is and how popular it will make your heating installations,

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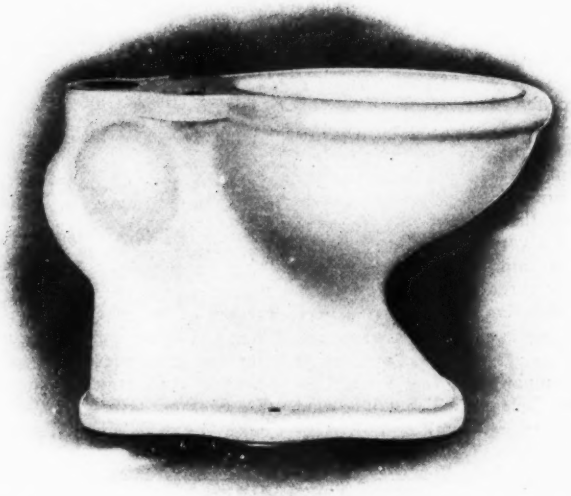
DETROIT	139 Jefferson Ave.	DENVER, COLO., Kellogg & Stokes Stove Co.

Mr. Plumber:

Watch this page and see us grow

A B I N G D O N



A B I N G D O N

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